The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 134, No. 15 — CHICAGO, ILLINOIS — AUGUST 9, 1947

COPYRIGHT, 1947, BY AMERICAN MEDICAL ASSOCIATION

THE LONGEVITY AND MORTALITY OF AMERICAN PHYSICIANS, 1938-1942

A Preliminary Report

LOUIS I. DUBLIN, Ph.D.
and
MORTIMER SPIEGELMAN, F.A.S.
New York

The centenary of the American Medical Association is a good occasion to review the longevity and mortality of physicians. It is valuable to learn what the men and women of the profession, dedicated to protect the health of others, have accomplished in protecting themselves. Such information is of importance for many reasons. It bears directly on the problem of replacement in the profession. From the economic point of view, the untimely death of physicians represents a material waste because of the large investment of time and money required to enter the field of medicine. Knowledge of the causes of death of physicians may well point the way to effective preventive measures.

The present study is based on the records of active and retired living physicians and on their deaths during the five year period 1938 through 1942 on file with the American Medical Association.[1] At the middate of this period, July 1, 1940 there were 175,159 living physicians in the country. Their distribution, according to sex and age is presented in table 1. Slightly more than one half of the physicians were 45 years of age or over. The average age of the men is 48.0 years, about one year less than that of women physicians. Of the total physicians entering this study, approximately 165,000 were actively engaged in their profession according to the census of 1940, the rest being for the most part on the retired list; the average age of these active physicians is 46.0 years. As might be expected, this average is considerably higher than that of all employed persons, namely 38.6 years.

A LIFE TABLE FOR PHYSICIANS

The first result emerging from the present investigation is a life table for physicians separately for men and for women. This life table shows the average years of life remaining at each present age; this is more commonly designated "the expectation of life." Specimen values of the expectation of life for physicians are shown in table 2. For purposes of comparison there have been included corresponding values of expectation of life for white persons in the general population, also for the period 1938-1942.

The average young physician entering his profession at age 25 has forty-three and a half years of life before him. This roughly represents the average professional career of physicians under current conditions of mortality. On reaching age 35 he still has on the average almost as many years remaining as he has already lived. In midlife, at age 45, the average physician may expect a further quarter century of lifetime. Almost twelve additional years of life remain to the average physician attaining age 65, a frequent age for retirement. Women physicians start out with an advantage of three and a half years over men at age 25, but this is reduced to less than one and a half years at age 65.

Young physicians have only a slightly greater expectation of life than white persons of the same ages in the general population. At age 25 physicians have the better outlook by about one quarter of a year, but this small advantage is lost even before midlife is reached. From age 35 onward the prospective lifetime for physicians is somewhat less than that for white persons in the general population, but the differences are not significant.

The present experience may be compared with an earlier life table for physicians for 1925.[2] For example, at age 30 the expectation of life has increased from 38.01 years in 1925 to 38.86 years in 1938-1942, a gain of 0.85 year. This improvement was not quite as great as that for white males in the general population of the country, who experienced meanwhile a gain of 1.35 years. The improvement in longevity for physicians was confined largely to ages under 50 years. The higher ages showed very little change from the earlier to the later period.

MORTALITY FROM ALL CAUSES COMBINED

In this preliminary study consideration is limited to the experience of the male physicians, who constitute 96 per cent of the total. Among all male physicians at ages 25 and over the death rate was 20.5 per thousand during the period 1938-1942, i. e. about 2 per cent per annum. Considered with regard to age, the death rates advanced from 1.7 per thousand at ages 25 to 34 years to 10.8 at ages 45 to 54 and then to 129.1 at ages 75 and over. These findings may be compared with the results of the study by Emerson and Hughes, which was based on records of the American Medical Association for 1925.[3] As is indicated in table 3, male physicians under 45 experienced a 37 per cent decrease in their mortality from 1925 to 1938-1942, while those at the higher ages showed a mixed picture. At ages

From the Statistical Bureau of the Metropolitan Life Insurance Company.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1947.

1. The basic material was compiled in the offices of the Association under the direct supervision of Dr. Roscoe G. Leland, formerly Director of the Bureau of Medical Economics, whose sustained interest and cooperation since the project was initiated, late in 1942, made this study possible. Dr. Leland and his successor, Dr. Frank G. Dickinson, made painstaking efforts to insure accuracy and completeness of the records.

2. Dublin, L. I., and Lotka, A. J.: Length of Life, New York, Ronald Press, 1936, p. 226.

3. Emerson, H., and Hughes, H. E.: Death Rates of Male White Physicians in the United States, by Age and Cause, Am. J. Pub. Health. **16:** 1088 (Nov.) 1926.

45 to 54 an improvement of 9 per cent is shown; but this was offset by a setback of 11 per cent at 55 to 64. The small increase at ages 75 and over may be due to a rise in the average age of physicians within this age range. Some satisfaction may be found in the fact that the rate of improvement in mortality among

TABLE 1.—*Physicians in the United States*

Distribution of the Living as of July 1, 1940 and of the Deaths from 1938 to 1942 According to Sex and Age

Age Group *	Living as of July 1, 1940			Deaths, 1938-1942		
	Total	Men	Women	Total	Men	Women
	Number					
All ages	175,159	168,266	6,893	17,828	17,169	659
Under 25	1,078	1,015	63	4	4	..
25-34	41,393	39,955	1,438	357	345	12
35-44	40,029	38,313	1,716	792	763	29
45-54	31,314	30,120	1,194	1,662	1,625	37
55-64	31,352	30,342	1,010	4,152	4,078	74
65-74	22,186	21,184	1,002	5,813	5,616	197
75-84	6,788	6,362	426	3,894	3,662	232
85 and over	1,019	975	44	1,152	1,075	77
Unknown age	.....	.....	..	2	1	1
	Per Cent Distribution					
All ages	100.0	100.0	100.0	100.0	100.0	100.0
Under 25	0.6	0.6	0.9	†	†	..
25-34	23.6	23.8	20.9	2.0	2.0	1.8
35-44	22.8	22.8	24.9	4.4	4.4	4.4
45-54	17.9	17.9	17.3	9.3	9.5	5.6
55-64	17.9	18.0	14.7	23.3	23.8	11.2
65-74	12.7	12.6	14.5	32.6	32.7	29.9
75-84	3.9	3.7	6.2	21.9	21.3	35.2
85 and over	0.6	0.6	0.6	6.5	6.3	11.7
Unknown age	....	....	....	†	†	0.2

* Age nearest birthday.
† Less than 0.05.

the younger physicians was greater than that for white males generally. On the other hand, there was some decrease in mortality among white males at the older ages in the general population.

In 1938-1942 the death rate for male physicians at all ages 25 and over was 2 per cent greater than that for white males of the same ages in the general population [4] (table 4). This close correspondence between the mortality of physicians and white males generally

TABLE 2.—*Expectation of Life for Physicians Compared with That for White Persons in the General Population of the United States, 1938-1942; Men and Women Separately*

Present Age	Men		Women	
	Physicians	United States White	Physicians	United States White
25	43.54	43.31	47.10	46.86
30	38.86	38.83	42.43	42.29
35	34.21	34.40	37.77	37.78
40	29.73	30.08	33.26	33.33
45	25.48	25.93	28.93	28.99
50	21.47	22.06	24.69	24.81
55	17.86	18.41	20.69	20.82
60	14.72	15.11	16.91	17.07
65	11.87	12.13	13.26	13.65
70	9.38	9.51	10.04	10.60
75	7.22	7.25	7.48	8.02
80	5.55	5.44	5.37	5.96

has been found in other studies. However, striking differences become evident for specific age periods. At ages 25 to 34, for example, the death rate for male physicians is only three fifths of that for all white males

4. To insure comparability in the two experiences, the death rates for males in the general population were adjusted on the basis of the age distribution of male physicians in 1940. The age adjusted death rates so computed show what the mortality of physicians would have been if they had experienced the age specific death rates (in five year age groups) of white males in the general population.

of the same ages. This advantage of physicians wears off rapidly with advance in age. At ages 55 to 64 physicians have the higher rate by 11 per cent and at 65 to 74 by 5 per cent. The death rates for the two groups are practically identical at ages 75 and over.

If we may be permitted to speculate a bit, the relatively low mortality of young physicians may reflect two circumstances. In the first place most of them are drawn from the better situated social-economic classes, which generally experience lower death rates. Secondly, only those young men in a good state of health can undertake and survive the strenuous requirements of a modern medical education. As their years of practice roll on, the effect of their professional activities shows itself in increasing degree in death rates approaching those of the general population. Toward the close of their professional life the accumulated strains from previous years, as well as current demands, appear to raise their mortality to a level above that of the general population. Those physicians who have managed to survive into late life, where they experience about the same mortality as the general

TABLE 3.—*Annual Death Rates per Thousand Male Physicians in the United States, 1938-1942 and 1925 Compared According to Age*

Age Group	Death Rate per 1,000		Per Cent Increase (+) or Decrease (−) from 1925 to 1938-1942
	1938-1942	1925*	
25 and over	20.5	21.2	— 3.3
25-34	1.7	2.7	—37.0
35-44	4.0	6.4	—37.5
45-54	10.8	11.9	— 9.2
55-64	26.9	24.2	+11.2
65-74	53.0	56.3	— 5.9
75 and over	129.1	123.2	+ 4.8

* From Emerson and Hughes.[3] The death rate at ages 25 and over has been adjusted on the basis of the age distribution of male physicians in 1940.

population, are presumably the hardier individuals who may be benefiting from a better heredity or from the advantages of a more favorable environment.

THE CAUSES OF DEATH AMONG MALE PHYSICIANS

Light on these considerations is thrown by the facts of mortality according to cause. Fortunately, the causes of death were ascertained in all but 208 cases, these forming only 1.2 per cent of the total deaths. The twenty leading causes accounted for 91.8 per cent of all the deaths; these are shown in table 5.

Far outstanding on the list are diseases of the heart and coronary arteries, with 40.7 per cent of the total deaths. Next in rank are intracranial lesions of vascular origin, accounting for 10.8 per cent of the deaths. There follow, in turn, cancer with almost 10 per cent, nephritis 6 per cent, pneumonia and influenza 5.5 per cent, accidents with almost 5 per cent, then arteriosclerosis, diabetes and suicide, each with about 2 per cent. Tuberculosis accounts for about 1.5 per cent of all deaths, and cirrhosis of the liver for a somewhat smaller proportion. The proportion for each of the remaining causes on the list is less than 1 per cent.

DEATH RATES BY CAUSE FOR PHYSICIANS AND GENERAL POPULATION COMPARED

It may be generalized that, on the whole, male physicians have higher death rates from the degenerative conditions than white males in the population but much lower death rates from most infectious diseases and surgical conditions.

The greatest excess in the mortality of physicians is found from leukemia, their death rate from this cause being 175 per cent of that for white males in the general population (table 6). Some of this excess mortality among physicians undoubtedly reflects better diagnosis, but consideration has also been given lately to the possibility that in some instances the condition may have been induced by their exposure to x-rays.[5] Next in rank of excess mortality is biliary calculi and other diseases of the gallbladder, with a ratio of 145 per cent. The reason for this large excess is not apparent, but it too may arise from better diagnosis. Fortunately, the death rates from these two causes are at a relatively low level.

Then follow three degenerative conditions with high death rates; these causes are intracranial lesions of vascular origin, with a ratio of 120 per cent in the death rates of male physicians to white males of the same ages, arteriosclerosis with a ratio of 116 per cent and diseases of the heart and coronary arteries with 118 per cent.

If the recorded death rates from diseases of the coronary arteries are considered alone, the ratio of the mortality of physicians to that of white males generally reaches the high figure of 181 per cent. Two important considerations arise in this connection. First, coronary disease may be expected to be recorded more frequently as a cause of death among physicians than among the general population simply because of the better opportunities for accurate diagnosis in this profession. Then in some instances where the death certificate was not available, diseases of the coronary arteries may be reported incorrectly or without mention of the contributing causes.

However, it appears unlikely that the foregoing reservations are sufficient to account for the entire excess mortality from diseases of the coronary arteries among physicians. If coronary disease was given undue emphasis in reporting causes of death, it was quite likely done at the expense of the other diseases of the cardiovascular-renal system. In this circumstance one would expect that the death rate from the cardiovascular-renal group, excluding coronary arteries, would be lower for physicians than for white males generally. This, however, is not the case in the present experience. The detailed data of table 7 show that at ages 35 to 44 the death rates from the cardiovascular-renal diseases, excluding those of the coronary arteries, are at the same level for physicians and white males generally; at ages 45 to 64, physicians actually have the higher death rates by a good margin. The suggestion remains, therefore, that the higher death rates from diseases of the coronary arteries among physicians than among white males generally may not arise entirely from better diagnosis and reporting but that causative factors may be present. Although there have been some opinions to the contrary,[6] the results of Smith from records of the Mayo Clinic [7] are pertinent in this connection. Six

TABLE 4.—*All Causes of Death*

Annual Death Rates for Male Physicians Compared with White Males in the General Population, United States, 1938-1942

Age Group	Death Rate per 100,000		Ratio of Death Rates: Physicians to White Males
	Male Physicians	United States White Males *	
25 and over	2,052.6	2,022.1	1.02
25-34	172.7	283.6	0.61
35-44	398.3	490.1	0.81
45-54	1,079.0	1,096.9	0.98
55-64	2,688.0	2,416.0	1.11
65-74	5,302.1	5,049.6	1.05
75 and over	12,912.6	12,917.4	1.00

* The general population death rates have been adjusted on the basis of the age distribution of male physicians in 1940.

TABLE 5.—*Rank of the Leading Causes of Death Among Male Physicians at Ages 25 and Over; United States, 1938-1942*

Rank	Cause of Death	Deaths		Death Rate per 100,000
		Number	Per Cent	
	All causes of death	17,165	100.0	2,052.6
1	Diseases of the heart and coronary arteries	6,994	40.7	836.3
2	Intracranial lesions of vascular origin	1,863	10.8	222.8
3	Cancer	1,659	9.7	198.4
4	Nephritis	1,016	5.9	121.5
5	Pneumonia and influenza	941	5.5	112.5
6	Accidents	793	4.6	94.8
7	Arteriosclerosis	419	2.4	50.1
8	Diabetes mellitus	372	2.2	44.5
9	Suicide	326	1.9	39.0
10	Tuberculosis	267	1.6	31.9
11	Cirrhosis of the liver	216	1.3	25.8
12	Diseases of the prostate	132	0.8	15.8
13	Pulmonary embolism and congestion	115	0.7	13.8
14	Ulcer of the stomach or duodenum	107	0.6	12.8
15	Biliary calculi and other diseases of the gallbladder	102	0.6	12.2
16	Hernia and intestinal obstruction	101	0.6	12.1
17	Leukemia and aleukemias	95	0.6	11.4
18	Appendicitis	86	0.5	10.3
19	Syphilis	76	0.4	9.1
20	Tumors, nonmalignant and unspecified	69	0.4	8.3
	All other specified causes, including senility	1,208	7.0	144.5
	Ill defined and unknown causes	208	1.2	....

TABLE 6.—*Annual Death Rates from the Principal Causes for Male Physicians Compared with White Males in the General Population,* Ages 25 and Over; United States, 1938-1942*

Cause of Death	Death Rates per 100,000		Ratio of Death Rates: Physicians to White Males
	Male Physicians	United States White Males	
All causes of death	2,052.6	2,022.1	1.02
Leukemia and aleukemias	11.4	6.5	1.75
Biliary calculi and other diseases of the gallbladder	12.2	8.4	1.45
Intracranial lesions of vascular origin	222.8	185.9	1.20
Diseases of the heart and coronary arteries †	845.3	713.7	1.18
Arteriosclerosis	50.1	43.2	1.16
Cirrhosis of the liver	25.8	23.3	1.11
Pneumonia and influenza	112.5	103.0	1.09
Diabetes mellitus	44.5	41.2	1.08
Suicide	39.0	37.6	1.04
Automobile accidents	44.2	49.5	0.89
Cancer	198.4	244.5	0.81
Appendicitis	10.3	13.4	0.77
Hernia and intestinal obstruction	12.1	16.1	0.75
Nephritis †	119.3	162.9	0.73
Ulcer of the stomach or duodenum	12.8	20.8	0.62
Accidents other than automobile	50.6	84.0	0.60
Diseases of the prostate	15.8	29.1	0.54
Tuberculosis	31.9	70.4	0.45
Syphilis	9.1	26.5	0.34

* The general population death rates have been adjusted on the basis of the age distribution of male physicians in 1940.

† The death rates relate to the period 1939-1942. Because of changes in the classification procedure (International List of Causes of Death) introduced in 1939, data for the general population for this cause are not comparable with those of earlier years.

5. Henshaw, P. S., and Hawkins, J. W.: Incidence of Leukemia in Physicians, J. Nat. Cancer Inst. **4**: 339 (Feb.) 1944. Ulrich, H.: The Incidence of Leukemia in Radiologists, New England J. Med. **234**: 45 (Jan. 10) 1946.

6. These are referred to by Master, A. M.: Incidence of Acute Coronary Artery Occlusion, Am. Heart J. **33**: 140 (Feb.) 1947.

7. Smith, H. L.: Incidence of Coronary Sclerosis Among Physicians, J. A. M. A. **108**: 1327 (April 17) 1937.

occupational groups were studied in which all cases were subject to the same criteria for diagnosis. In each age group the proportion of cases with coronary sclerosis was found to be much higher for physicians than for the other occupations.

There are left four causes on the list with death rates for physicians above those for white males generally. For two of these, cirrhosis of the liver and diabetes, the excess may reflect, largely, better diagnosis and reporting. It is pertinent to note at this point that a study of Joslin's records shows that diabetic physicians experience lower death rates from all causes than do persons with diabetes generally;[8] this may be a result of their advantages for early diagnosis and better treatment. As for the small excess mortality from suicide among physicians, a similar finding has been

TABLE 7.—*The Cardiovascular-Renal Diseases*

Number of Deaths and Annual Death Rates for Male Physicians Compared with White Males in the General Population: United States, 1938-1942

Age Group	Male Physicians: Number of Deaths	Male Physicians: Per Cent of Deaths from All Causes in Age Group	Male Physicians: Death Rate per 100,000	United States: White Males:* Death Rate per 100,000	Ratio of Death Rates: Physicians to White Males
Cardiovascular Renal Diseases					
25 and over....	10,241	59.7	1,224.6	1,090.0	1.12
25-34.....	44	12.8	22.0	38.2	0.58
35-44.....	290	38.0	151.4	127.7	1.19
45-54.....	911	56.1	604.9	452.2	1.34
55-64.....	2,511	61.6	1,655.1	1,238.7	1.34
65-74.....	3,577	63.7	3,377.1	2,977.8	1.13
75 and over....	2,907	61.4	7,924.2	8,394.6	0.94
Unknown age..	1	....	.....	.....	....
Diseases of the Coronary Arteries and Angina Pectoris					
25 and over....	3,453	20.1	412.9	227.5	1.81
25-34.....	11	3.2	5.5	6.8	0.81
35-44.....	128	16.8	66.8	44.1	1.51
45-54.....	418	25.7	277.6	159.2	1.74
55-64.....	1,061	26.0	699.4	359.4	1.95
65-74.....	1,248	22.2	1,178.2	619.5	1.90
75 and over....	587	12.4	1,600.1	990.0	1.62
Cardiovascular Renal Diseases, Excluding Diseases of the Coronary Arteries and Angina Pectoris					
25 and over....	6,788	39.6	811.7	862.5	0.94
25-34.....	33	9.6	16.5	31.4	0.53
35-44.....	162	21.2	84.6	83.6	1.01
45-54.....	493	30.4	327.3	293.0	1.12
55-64.....	1,450	35.6	955.7	879.3	1.09
65-74.....	2,329	41.5	2,198.9	2,358.3	0.93
75 and over....	2,320	49.0	6,324.1	7,404.6	0.85
Unknown age..	1	....	.....	.....	....

* The general population death rates have been adjusted on the basis of the age distribution of male physicians in 1940.

observed in other experiences. Among all the causes of death for which physicians have the higher mortality, there is only one infectious in nature—pneumonia and influenza. The excess mortality here is 9 per cent, and most of it is due to the high death rates from these conditions among physicians at 65 and over.

For the only other two infectious conditions among the leading causes of death, namely tuberculosis and syphilis, the death rates for physicians are very low as compared with white males generally. In the case of tuberculosis the physicians have less than half the general death rate, while for syphilis it is only one third. The more favorable mortality among physicians from these two conditions reflects largely the better situation in the social-economic class to which they belong and also the self selection by the healthier lives to study medicine. In addition, where physicians are exposed to infections they have the advantages of better knowledge of how to protect themselves and to control infections that have been acquired. The mortality from nephritis among physicians was only 73 per cent of that for white males generally. The full significance of this better showing is not apparent. The explanation may be, to some extent, in the quality of the reports of causes of death.

Aside from these three conditions—nephritis, tuberculosis and syphilis—the other diseases for which physicians experience the more favorable mortality are generally amenable to surgical intervention. These include cancer, with a ratio of 81 per cent in the death rates of male physicians to white males, appendicitis with 77 per cent, hernia and intestinal obstruction 75 per cent, ulcer of the stomach or duodenum 62 per cent and diseases of the prostate 54 per cent. The advantage of physicians from these conditions as compared with the general population is probably due to their appreciation of the significance of symptoms and their better opportunities for early diagnosis and also for prompt and expert treatment.

Another indication of the precautions exercised by physicians, as far as the obvious hazards are concerned, is found in the low incidence of fatal accidents among them as compared with white males in the general population. Their death rate from automobile accidents was 89 per cent of that for the general population, while the ratio for all other forms of accidents was only 60 per cent.

CONCLUSION

The overall picture is that physicians experience practically the same longevity and mortality as white males of the same ages in the general population. According to data for the period 1938-1942 the average length of life for the young man entering the medical profession at age 25 is forty-three and a half years; for the young woman at 25 it is over forty-seven years. The mortality among male physicians is at a rate of 2 per cent per annum.

The physician, utilizing his special knowledge and skills, profits from the early recognition of the immediate conditions and hazards which affect his health. Evidence in this direction is found in the favorable mortality from most infectious diseases and surgical conditions and from accidents. The death rate from tuberculosis among male physicians is less than half that of white males of the same ages in the general population; for syphilis the ratio is only one third. The death rate from cancer among male physicians is four fifths of that for white males of the same ages; in the case of appendicitis, hernia and intestinal obstruction the ratio is three fourths. Fatalities from automobile accidents among male physicians occur at a rate nine tenths of that for white males generally; for all other types of accidents the ratio is only three fifths.

These advantages are offset by a relatively high mortality from the cardiovascular conditions. In particular, the recorded death rate from diseases of the coronary arteries among male physicians is one and four-fifths times that of white males of the same ages in the general population. This excess cannot be accounted for entirely by better diagnosis and by the quality of the reporting of causes of death; it is suggested that causative factors may be present in the higher mortality from diseases of the coronary arteries among physicians. The causes are not immediately apparent, and there is

8. Diabetes in the 1940's, George F. Baker Clinic, Boston and Metropolitan Life Insurance Company, New York, September 1940.

therefore much room for surmise. There come to mind the special activities and burdens of the profession: their call to service at any time, their constant guard against varied infections and their need for mental alertness all may well impose strains that are felt in few other callings.

The mortality from leukemia among male physicians is one and three-fourths times that of white males generally. Although better diagnosis may account for some of this excess, opinion has been expressed recently that in some instances physicians may have acquired the disease as a result of their exposure to x-rays.

There is room for much intensive study for underlying factors in the case of those conditions for which physicians experience a higher mortality than the general population.

ABSTRACT OF DISCUSSION

DR. HAVEN EMERSON, New York: While my studies of 1926, though less complete than Dr. Dublin's of today, showed essentially the same characteristic, may I be permitted to doubt the assumption offered this morning to the effect that "knowledge of the causes of death of physicians may well point the way to effective preventive measures." Not unless we have some rational inkling of the predisposing and precipitating etiology and find them to be preventable. The main cause, I believe, of this high rate among certain causes of death is that we are entirely, as a profession, whether a public health profession or a medical profession, wholly ignorant of the determining and predisposing factors that lead to these deaths from the cardiovascular-renal complex. We really know nothing useful as to the causative or preventive factors that lead to cardiovascular deaths in physicians or others in the decades above 60 years. Work, anxiety, sustained mental alertness, irregularity of rest, food and exercise are common to many others than physicians. Leukemia as a preponderant cause should prove possible of occupational explanation. What seems to me well maintained in the present and other studies of deaths of physicians is that where a cause is known, and known to be preventable, physicians take the benefit of this knowledge and put it to personal use earlier than they can make it effective among their patients, or at least than it can be demonstrated in the general population. Other things being equal, the higher the cardiovascular death rate in the community, age, sex, race and occupation being considered, the better has been the public health service in that community. I see no reason to believe that the high rates for these conditions among physicians means anything more than that physicians have, on the whole, been spared more commonly to live into the decades when nature takes their fate in hand and cuts the thread of life. There is little evidence that physicians as a class observe the precaution of periodic health examination, endorsed by the A. M. A. as long ago as 1922, nor is there any evidence of superiority of general hygienic practices by physicians, especially in matters of diet and habitual use of alcohol, and tobacco particularly. I should say that we have not proved any point of superiority of physicians in the manner of their living, although there is probably for the medical student a more thoughtful regard for his health through the use of repeated chest x-ray examinations particularly than for other persons likely to be separately recorded. I think we must learn more of functional pathology and the problems of metabolism, the natural history of aging, rather than to rely on comparison between physicians and the general public as evidence or explanation of differential death rates of physicians.

DR. LOUIS I. DUBLIN, New York: I would go along with Dr. Emerson if what I showed with regard to the excess mortality from coronary disease were limited to the age period 65 and over. There would then be merit to his point, and we wouldn't have made the statement he quoted. However, these excesses in mortality from coronary disease amount to 44 per cent at ages 25 to 44 and to 88 per cent at ages 45 to 64. Such excesses in mortality at relatively early ages do not indicate that we are concerned with the inevitable and that, since death is our lot, coronary disease and heart conditions must loom large in the picture. We know that advantage can be taken of existing knowledge in the fields of medicine and public health; for the preventable diseases have already been very much brought under control. Dr. Emerson would suggest that we really know next to nothing with regard to the preventability of the cardiovascular conditions. That doesn't seem to fit at all into what we, as public health people, are insisting in all our public statements. What is the basis of the entire campaign in the heart field and in the field of personal hygiene? Does the physician help himself? Does he follow what he knows and what he tells his patients? Dr. Emerson himself later indicated that there was a good deal of merit in the criticism that the doctor himself doesn't follow his own mandate with regard to diet, with regard to rest and with regard to exercise. The point that he made with regard to the high mortality from cardiovascular disease in those communities which have the lowest death rates and the highest sanitary standards has no bearing here. I know perfectly well that lives are saved from typhoid, tuberculosis and diphtheria, so that an increasing proportion of deaths will occur at the higher ages. By the end of the century 90 per cent of all deaths will be beyond age 45. But that is not what we are talking about; we are concerned with comparisons of mortality made age for age. I showed you the real advantages which the doctor has in mortality from most infectious diseases and from surgical conditions. But against these advantages are the evidences of some faults in personal hygiene and of a very difficult way of life. This helps explain what we have shown. One would have every right to believe that for a group of physicians beginning their career about age 25 there would be an advantage of a number of years in expectation of life as compared with the general population at the same stage of life. But the advantage doesn't exist; it has been washed away. Whatever they have saved from some infectious and surgical conditions they have lost by not making the most out of the advantages that come from a good personal hygiene and normal tempo of living.

MEAT IN THE DIET OF YOUNG INFANTS

RUTH M. LEVERTON, Ph.D.
Lincoln, Neb.
and
GEORGE CLARK, M.D.
Omaha

The use of meat in the diet of infants before the age of 6 to 9 months has not been a general practice, because of the prejudice that meat is hard to digest and because it has not been available in a suitably homogeneous form. With scientific evidence to refute the prejudice and with commercially strained meat now available for use, meat presents itself to the pediatrician and parent as a concentrated source of high quality protein for supplemental feeding at an age when the protein requirement, expressed on the basis of body weight, is at its highest.

Reported here are the results of adding strained meats to the formulas of bottle-fed babies beginning at the age of 6 weeks and continuing for a period of eight weeks. The purpose was twofold: first, to determine the acceptability of and tolerance for meat in infants at an early age; and second, to determine the effect on the hemoglobin and red cell values in infants receiving meat as compared with those receiving no meat. The work was done in two institutions in which normal well babies were kept pending their adoption or their return to parental homes.[1] During a six month

This work was supported by a grant from Swift and Company.
From the Department of Home Economics and the Department of Pediatrics, University of Nebraska.
Published with the permission of the director as paper 419, Journal Series, Nebraska Agricultural Experiment Station.
1. The staff members of the two institutions cooperated in this study.

period 33 infants were studied; 18 received the strained meat supplement and 15 served as controls.

The strained meat was mixed with the formula just before it was distributed into the bottles for individual feedings. The amount of meat added was determined by calculating the quantity necessary to increase the protein content of each infant's formula 25 per cent, and therefore it varied with the strength of the formula and the variety of meat used. The varieties were veal, beef, pork and lamb; one was used each week, and then the sequence was repeated. The amount of strained meat averaged about 27 Gm. daily. The total amount was not added abruptly—one third of the total was added for three days, this was increased to two thirds for the second three days, and then the full amount was added beginning the seventh day. The "dextri-maltose" in the formula was decreased sufficiently to compensate for the calories furnished by the meat.

One institution used fresh milk and "dextri-maltose" for the formulas and gave each infant a 25 mg. ascorbic acid tablet daily. The other institution used evaporated milk and "dextri-maltose" and used tomato or citrus fruit juice as a source of ascorbic acid. Both institutions used a concentrated source of vitamin D. All the babies were given five feedings at four hour intervals omitting the 2 a. m. feeding.

Comparison of Blood Values of Meat Group and Control Group of Infants

	No.	Age of Infants 6 Wk.	12 Wk.	14 Wk.
Actual				
Hemoglobin, Gm./100 cc.				
Meat group	18	10.5	11.5	11.9
Control group	15	10.7	10.3	9.6
Red cells, m./c.mm.				
Meat group	18	3.60	4.13	4.40
Control group	15	3.67	3.87	3.90
Percentage of initial value				
Hemoglobin, Gm./100 cc.				
Meat group	18	100	109.5	113.3
Control group	15	100	96.3	89.7
Red cells, m./c.mm.				
Meat group	18	100	114.7	122.2
Control group	15	100	105.4	106.2

Records were kept of the number, color and consistency of the stools, of daily temperature, food intake and regurgitation, and of comments from the members of the nursing staff in regard to the infants. The infants were weighed three times a week and measured at the beginning and end of the study.

At the beginning of the study, when each infant was 6 weeks old, the hemoglobin and red cell content of the blood was determined. Hemoglobin was converted to acid hematin and read in a Cenco-Sheard-Sanford photelometer. The blood tests were repeated at the end of six and eight weeks, or when the infants were 12 and 14 weeks of age.

RESULTS

The infants readily accepted the formula with the strained meat added and demonstrated no distress from it. During the first week on the strained meat supplement 10 of the 18 infants averaged one more stool a day than during the week previous to the addition of meat or during the second week of their meat regimen. As was to be expected, over the short period of eight weeks there was no difference in the gain in weight or length of the infants receiving the strained meat as compared with the controls. The nurses considered that in general the babies who received strained meat routinely were more satisfied and slept better at night than did the control babies. The pediatrician (G. C.) in charge of the medical care for all the children considered that the babies were in a better physical condition as a result of receiving the meat supplement.

The results of the blood tests are shown in the accompanying table. The values determined six and eight weeks after the initial test are expressed in percentage of the initial value. In this way each infant is compared with himself, and his progress is indicated by values above or below 100 per cent.

It may be seen that the average hemoglobin and red blood cell values of the 18 infants who received meat for eight weeks were 113.3 per cent and 122.2 per cent, respectively, of the average values at the beginning of the study. Similar comparison of values for the control group shows that the hemoglobin and red cell content was 89.7 per cent and 106.2 per cent of the initial values. There was less variability as judged by the range of individual values in the meat group than in the control group.

On the basis of these figures it appears that the addition of strained meat to the formula not only checks the drop in hemoglobin characteristic of this age but actually promotes the formation of hemoglobin and red blood cells. It is not within the scope of this preliminary study to speculate on which factor or factors in the meat were responsible for the improvement. From the practical point of view, meat is a food, and this food made the difference in the supplemented group as compared with the control group.

SUMMARY AND CONCLUSIONS

1. No adverse symptoms occurred when the protein intake of 18 bottle-fed infants was increased by 25 per cent by the addition of approximately 1 ounce (27 Gm.) of strained meat to the formula when the infants were 6 weeks of age.

2. The observations of the pediatrician and the members of the nursing staff suggest that the general well-being of the infants who received the meat supplement was better than of the controls.

3. This preliminary study indicates that strained meat added to the formula of bottle-fed infants not only checks the drop in the hemoglobin level, which is characteristic of this age, but actually promotes the formation of hemoglobin and red blood cells.

Coronary Subsidiary Channels.—In later years it has become well known that there is a rich network of anastomoses which runs throughout the muscle and connects terminals not only from neighboring small branches but even from the right and the left coronary. It now appears that, instead of increasing the number in later years, nature laid them down to begin with—many tiny communicating filaments with little to do but be ready when called on. If there is any interference with arterial flow in one locality, an inflow of blood is sent from less obstructed territory through these subsidiary channels, which enlarge with use. . . . Coronary disease of extent sufficient to produce angina is a serious matter. Sudden death may occur. Complete occlusion with or without myocardial infarction may ensue. Congestive failure may follow. In many instances the development of collaterals, the avoidance of precipitating factors and the relief of accompanying disturbances may result in temporary or permanent cessation of attacks, the disease then becoming latent. In many cases proper attention to abdominal symptoms yields valuable results. And equally if not more important, the patient should have the confident assurance from his doctor that nature, continually at work to develop an adequate collateral circulation, may count him among her successes. —Luten, Drew W.: The Clinical Course of Coronary Disease, *Postgraduate Medicine*, May 1947.

HISTOPLASMOSIS

A Review of the Cutaneous and Adjacent Mucous Membrane Manifestations with a Report of Three Cases

ARTHUR C. CURTIS, M.D.
Ann Arbor, Mich.
and
JOHN N. GREKIN, M.D.
United States Public Health Service

Histoplasmosis has been considered, until recently, an extremely rare disease of tropical origin, but in the current literature there has been a geometric increase of case reports. Most cases of histoplasmosis have been systemic and generalized, but involvement of the skin and nearby mucous membrane is common, and there is evidence that the disease may be local as well as generalized.

Darling [1] described the first 3 cases of histoplasmosis in Panama; hence the tropical connotation long attached to the disease. He did not suspect that the etiologic agent was a fungus but believed the organism to be protozoan in nature. Da Rocha-Lima,[2] who studied Darling's microscopic sections in 1913, was the first to suggest a yeastlike fungus as the cause of the disease; but confirmation of the correct etiology was not forthcoming until 1934, when De Monbreun [3] cultured the fungus from the blood and spleen of an infant 5 months of age and suggested its identity with the organism observed in the original cases.

From the time when Darling described the disease until 1937, only 13 valid cases were recognized, and 6 of these were identified in retrospect. Almost 70 cases have been described in the past eight years, and many of these have had primary or secondary extensions pertaining to the skin. The realization that diagnosis often depends on a prolonged and painstaking microscopic search for the organism by a trained pathologist has led to more frequent recognition of the disease.

MYCOLOGY

Histoplasma capsulatum is different from other pathogenic fungi in that it primarily invades the reticuloendothelial system; hence, the synonym for histoplasmosis is reticuloendothelial cytomycosis. The organism occurs in tissue intracellularly in the macrophages as a small round encapsulated yeastlike body, with the capsule easily discernible. According to Parsons and Zarafonetis [4] it varies in size from 1 to 5 microns with an average diameter of 3 microns, although larger forms up to 10 microns have been recognized. The microscopic differentiation of H. capsulatum from the organisms of leishmaniasis and toxoplasmosis is important. The tissue pathology is that of a granuloma with pseudotubercle formation, necrotic foci bordered by macrophages containing the organism and areas of ulceration (fig. 1).

Direct identification of the organism can sometimes be made from smears of the peripheral blood,[4] of material from sternal aspiration and of material from fresh biopsy specimens (fig. 2). As reported in our first case, the fungus was found in a specimen of sputum. Occasionally, budding forms are seen in fresh preparations. Hematoxylin and eosin, Giemsa and Wright's stains are among those more satisfactory for use in both biopsy material and direct smears.

At room temperature, H. capsulatum grows on Sabouraud's medium as a white, fluffy, aerial mycelium which is grossly indistinguishable from Blastomyces dermatitidis (fig. 3). It has been an observation of ours that it cracks the medium somewhat as does Paracoccidioides cerebriformis (fig. 4). In culture mounts from young colonies both H. capsulatum and B. dermatitidis show septate and branched hyphae bearing small pyriform or round spores 2.5 to 3 microns in diameter (fig. 5). As the cultures of H. capsulatum grow older, however, a microscopic mount will reveal characteristic tuberculate chlamydospores. These are large spores 7.5 to 15 microns in diameter with easily discernible spiny processes projecting from the entire surface. Their presence establishes the diagnosis (fig. 6). At 37 C. on blood agar the organism grows as a yeast in moist white colonies, which reveal on culture mounts a tiny budding yeast body varying in size from 1 to 5 microns and similar to the forms found in tissue. Biopsy specimens, peripheral blood, material from sternal aspiration and abscess fluid should all be cultured.

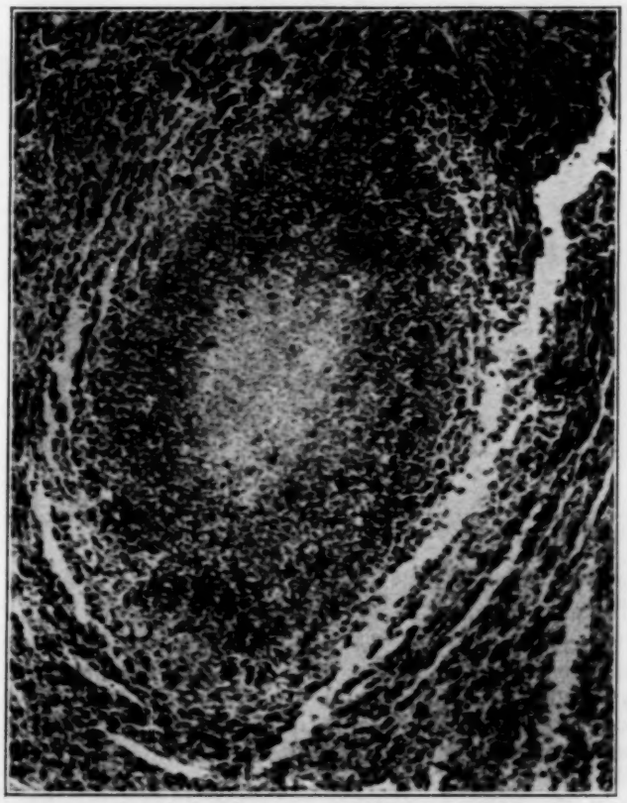


Fig. 1.—Low power photomicrograph of a section of adrenal gland with a typical lesion of histoplasmosis. Pseudotubercle formation within the granulomatous mass is apparent.

From the Department of Dermatology and Syphilology, University of Michigan Medical School; service of Drs. U. J. Wile and Arthur C. Curtis.

Read before the Section on Dermatology and Syphilology at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 5, 1946.

Because of lack of space, this article has been abbreviated in THE JOURNAL by omission of tables 1 and 2, figures 3, 4, 5, 6 and 12 and portions of the text. The complete article will appear in the author's reprints.

1. Darling, S. T.: (*a*) A Protozoan General Infection Producing Pseudotubercles in the Lungs and Focal Necrosis in the Liver, Spleen and Lymph Nodes, J. A. M. A. **46**: 1283 (April 28) 1906; (*b*) Notes on Histoplasmosis: A Fatal Disorder Met with in Tropical America, Maryland M.J. **50**: 125 (April) 1907; (*c*) A Fatal Infectious Disease Resembling Kala Azar Found Among Natives of Tropical America, Arch.Int.Med. **2**: 107 (Sept.) 1908.

2. da Rocha-Lima, H.: Beitrag zur Kenntnis der Blastomykosen: Lymphangitis epizootica und Histoplasmosis, Centralbl. f. Bakt. (Abt. 1) **87**: 233, 1913.

3. De Monbreun, W. A.: The Cultivation and Cultural Characteristics of Darling's Histoplasmosis Capsulatum, Am. J. Trop. Med. **14**: 93 (March) 1934.

4. Parsons, R. J., and Zarafonetis, C. J. D.: Histoplasmosis in Man: Report of Seven Cases and a Review of Seventy-One Cases, Arch. Int. Med. **75**: 1 (Jan.) 1945.

A third method of diagnosis which has attained an equivocal degree of success is the skin test, developed independently by Van Pernis, Benson and Hollinger [5] and by Zarafonetis and Lindberg.[6] The antigen, known as histoplasmin, consists of a sterile filtrate prepared from broth cultures of the organism and is injected intracutaneously, the test being read after forty-eight

Fig. 2 (case 2).—Photomicrograph made from microscopic section of the lesion of the tongue. An abundance of H. capsulatum organisms is visible within the macrophages (oil immersion).

hours. Positive reactions present both edema and erythema, the former having a diameter of at least 5 mm.

Specificity of the test has been studied by several investigators. Emmons [7] found that of 39 guinea pigs infected with experimental histoplasmosis, 32 reacted to histoplasmin, while all of 8 experimentally infected with blastomycosis reacted to histoplasmin. After delving further into the problem as it concerned human subjects, Emmons expressed the belief that a positive reaction to histoplasmin might be due to sensitization either to H. capsulatum, B. dermatitidis or even to other as yet undetermined antigenic agents. Palmer,[8] after an extensive study of nontuberculous pulmonary calcification in student nurses, was of the opinion that positive reactions to histoplasmin should be regarded as evidence of previous infection with H. capsulatum or an immunologically related organism. He summarized the results of his investigation with the rather startling conclusion that a high percentage of pulmonary calcifications in persons presenting negative reactions to tuberculin were in his opinion associated with infections due to H. capsulatum. It was suggested by Christie and Peterson [9] that since the causative organism of histoplasmosis appears to flourish only in the yeast form in infected animals and human beings, an antigen extract of this phase might logically be expected to give more satisfactory results than the broth filtrate, with its extraneous antigens. Preparation of such a product would apparently require the use of a blood agar medium, with frequent transfers to fresh mediums.

The concept of subclinical varieties of histoplasmosis, in contrast to the severe, usually fatal form of the disease hitherto diagnosed, has been postulated by numerous investigators as an explanation for the high percentage of persons demonstrating a positive skin test with no detectable evidence of the disease in an active form.

In essence a positive cutaneous response to histoplasmin is frequently, for reasons cited previously, of little or no clinical significance, while a negative reaction may be helpful so far as it eliminates histoplasmosis as a diagnostic possibility.[9]

Various laboratory animals have been found susceptible to H. capsulatum, including mice,[5] rabbits,[6] rats [10] and guinea pigs.[11] This susceptibility can be a definite aid in the identification of the organism and diagnosis of the disease. De Monbreun [12] has reported the only case of the natural invasion of H. capsulatum in an animal, having isolated the organism from a dog.

Fig. 7 (case 1).—Two rather deep seated, discharging, granulomatous lesions, which occurred over the calf.

H. capsulatum distributes itself widely throughout the reticuloendothelial system, and a complete review

5. Van Pernis, P. A.; Benson, M. E., and Hollinger, P. H.: Specific Cutaneous Reactions with Histoplasmosis: Preliminary Report of Another Case, J. A. M. A. **117**: 436 (Aug. 9) 1941.

6. Zarafonetis, C. J. D., and Lindberg, R. B.: Histoplasmosis of Darling: Observations on Antigenic Properties of the Causative Agent; Preliminary Report, Univ. Hosp. Bull., Ann Arbor **7**: 47 (June) 1941.

7. Emmons, C. W., and Olson, B. J.: Studies of the Role of Fungi in Pulmonary Disease: Cross Reaction of Histoplasmin, Pub. Health Rep. **60**: 1383 (Nov. 23) 1945.

8. Palmer, C. E.: Nontuberculous Pulmonary Calcification and Sensitivity to Histoplasmin, Pub. Health Rep. **60**: 513 (May 11) 1945.

9. Christie, A., and Peterson, J. C.: Pulmonary Calcification in Negative Reactors to Tuberculin, Am. J. Pub. Health **35**: 1131 (Nov.) 1945.

10. Hansmann, G. H., and Schenken, J. R.: A Unique Infection in Man Caused by a New Yeast-Like Organism, a Pathogenic Member of the Genus Sepedonium, Am. J. Path. **10**: 731 Nov.) 1934.

11. Negroni, P.: Estudio micológico del primer caso sud-americano de histoplasmosis, Rev. d. Inst. bact. **9**: 239 (June) 1940.

12. De Monbreun, W. A.: The Dog as a Natural Host of Histoplasma Capsulatum: Case of Histoplasmosis in This Animal, Am. J. Trop. Med. **19**: 565 (Nov.) 1939.

of the reported cases [4] reveals the involvement of almost every organ. Darling [1] considered that the primary symptoms were fever, splenomegaly, loss of weight, anemia and leukopenia and that the disease was chronic in nature. The more commonly involved sites include the skin and adjacent mucous membranes, the larynx, lungs, liver, spleen and gastrointestinal tract, as well as the bone marrow and lymph nodes.

Three cases are reported here, each of definite diagnostic interest to the dermatologist, followed by a review of previously reported cases involving the skin or adjacent mucous membranes. Case 1 is also being reported elsewhere but is included because of the interesting cutaneous lesions and the problem in differential diagnosis. Material from the patients in cases 2 and 3 has been used in various in vitro tests of proposed therapeutic agents.[13]

REPORT OF CASES

CASE 1.—F. F., a white woman aged 30, a native of Michigan, had been well until June 1943, when there suddenly developed a swelling in the right lower quadrant of her abdomen, which was soft, tender and associated with an erythema and an increase in the temperature of the overlying skin. No constitutional reaction was present, and the appendix and right ovarian tube of the patient were removed. Ten days later there developed pain in the left side and a bilateral thrombophlebitis, which was treated with a sulfonamide drug and healed in six weeks. She remained well until November 1943, at which time a swelling developed in the right cervical region which was painful and hot with reddish purple discoloration of the skin. It gradually enlarged to the size of a hen's egg and was associated with daily afternoon elevations of temperature to 102 F. and occasional sweats at night. The nodule was incised in December 1943. It exuded a watery yellow fluid, and drainage continued until August 1944, when closure finally occurred. From October 1943 until February 1944 the patient suffered from an irritating nonproductive cough. In January 1944 the spleen and liver were observed to be enlarged, and a nodule developed on the right wrist. This was incised in May 1944, discharging a yellow sanguineous fluid, and at the same time the patient received 1 million units of penicillin, after which the second lesion healed. However, two weeks later nodules developed on the forehead, the left leg, the left thigh and two on the right leg. These lesions ulcerated and drained, and while those on the left leg healed in several months, the others persisted. Splenomegaly, hepatomegaly and elevations in temperature continued to be present. There was nothing contributory in the family, social or past histories.

She was admitted to the University Hospital on Sept. 9, 1944, at which time physical examination revealed a chronically ill, pale and emaciated white woman. The temperature was 100 F., the pulse rate 100, the respiratory rate 20, the blood pressure 95 systolic and 60 diastolic and the weight 99 pounds (45 Kg.). The skin was dry and showed evidence of recent loss in weight. Two draining granulomatous lesions were present on the right calf. These were fairly deep seated, soft, brownish purple and each about 2 cm. in diameter (figs. 3 and 4). A fluctuant brownish purple nodule 1.5 cm. in diameter was present on the midforehead. Firm, nontender, hypertrophic brown scars, which varied from 1.5 to 4 cm. in diameter, were noted on the left calf, the left thigh, the volar surface of the right wrist and below the mandible on the right side of the neck. Significant involvement of the lymph glands was not present. The nasal mucosa was hyperemic, but the buccal mucosa was normal. The right side of the chest was dull anteriorly and over the axillary third and fourth intercostal spaces. Bronchovesicular breathing and coarse rales were present in these areas. Rales were also present at both pulmonary bases, and bronchial breathing was heard over the right base. The spleen was palpable 2.5 cm. below the left costal margin, moved freely with respiration and was nontender. The liver was palpable 3 cm. below the costal margin at the right nipple line and 6 cm. below the xyphoid cartilage and was slightly tender. There was decided tenderness over the right hip joint with sciatic radiation. The deep tendon reflexes were not elicited in the lower extremities.

On the patient's first admission she remained hospitalized until November 1944. The diagnosis of histoplasmosis was made from the sputum examination, and while awaiting the arrival of an antimony compound for treatment the patient was placed on penicillin therapy, receiving 480,000 units daily. The course was progressively bad, and respirations ceased five days later. On the last day of life the liver and spleen were no longer palpable.

Urinalyses were persistently negative. Roentgenograms of the chest showed right hilar adenopathy and patchy pneumonitis of the right lung and atelectasis. Roentgenograms showed little change until February 1945, when widely disseminated parenchymal disease of both lungs was apparent, with patchy increase in density from apexes to bases bilaterally.

The total serum protein was 6.7 Gm. per hundred cubic centimeters on admission, with an albumin-globulin ratio of 2.2. The sulfobromophthalein sodium test for liver function showed 40 per cent retention of the dye by the liver in thirty minutes. The prothrombin time was 115 seconds as compared with a control time of 40 seconds. The congo red test for amyloid showed no retention of the dye in the tissues after one hour.

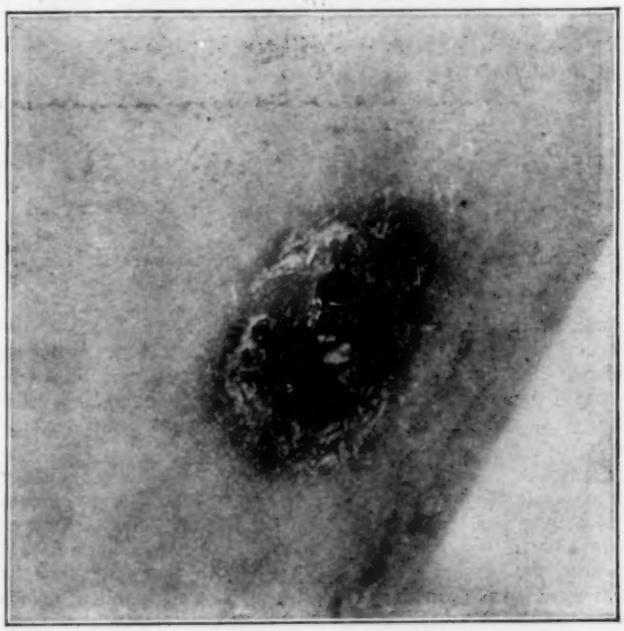


Fig. 8.—Close-up view showing the upper of the two lesions in figure 7. This lesion was approximately 2 cm. in diameter.

The intradermal tuberculin test using a 1:10,000 dilution of old tuberculin was positive at twenty-four, forty-eight and seventy-two hours, showing an area of erythema and induration of 1 by 1.5 cm. The intradermal test for histoplasmosis was also positive, showing an area of erythema and induration measuring 2 by 2.5 cm. at twenty-four hours, 2 by 3 cm. at forty-eight hours and 3 by 5 cm. at seventy-two hours.

Repeated direct examinations of material from the cutaneous lesions, sputum and stool were negative for mycotic or tuberculous organisms until February 1945, when H. capsulatum was found in the sputum.

Antemortem biopsies from the cutaneous lesions on the leg, thigh and forehead revealed in each instance a chronic infectious granuloma with epithelioid cells about caseous centers, a round cell infiltrate and a few giant cells. In no instance were the organisms of H. capsulatum found, and repeated special stains for Mycobacterium tuberculosis were negative.

The pertinent autopsy observations were as follows: Grossly there were bilateral confluent necrotizing pneumonia, extensive granulomatous peritonitis with tubercle-like lesions and abscesses, extensive liquefying lesions in the liver and abdominal lymph nodes and miliary lesions in the brain, spleen, liver, thyroid,

13. Seabury, J. H.: To be published.

capsule of the pituitary body, adrenals, kidneys and urinary bladder. In addition there were a chronic adhesive pleuritis and an old fibrocalcareous tuberculosis of the right upper pulmonary lobe. Microscopically H. capsulatum was present in enormous numbers in granulomatous foci and in Langhans' giant cells in the lungs and spleen. The organisms were also

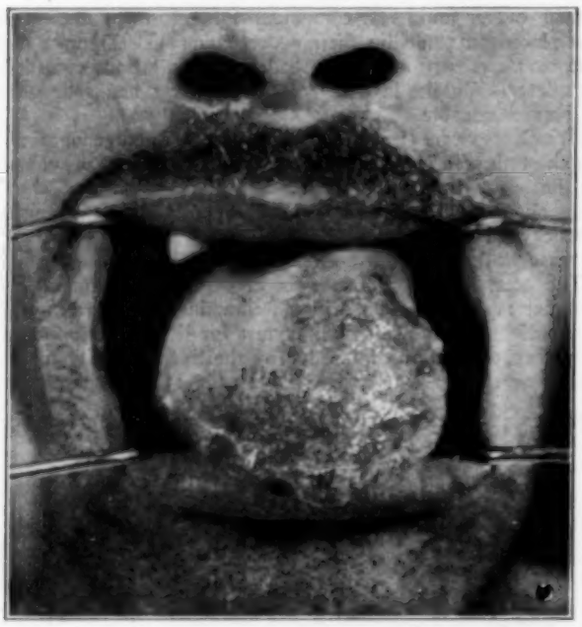


Fig. 9 (case 2).—Involvement of the left side of the tongue by a large, firm, fungating lesion. The papular eruption over the chin had already cleared at the time this photograph was made.

identified in the brain, the walls of the large intestine, the abdominal lymph nodes, the bone marrow and the fallopian tubes. The typical lesion was one of central caseation surrounded by an epithelioid zone and Langhans' giant cells. Tubercles and Myco. tuberculosis were demonstrated in the liver.

Case 2.—I. T. W., a Negro man aged 42, gave a history of red, painful and tender nodules occurring about the scalp and neck in 1930. These lesions, which ulcerated and discharged a foul blood-tinged material, persisted over a period of several months, during which time the patient felt ill. After this he was well until January 1944 when painful, swollen glands appeared in the left side of the neck just beneath the ear and progressively spread down the posterior cervical chain. This was accompanied by malaise, night sweats and some loss of weight. The glands were incised in March 1944, exuding a sanguineous material, and the discharge persisted intermittently until July 1944. In May 1944 his tongue became red, tender and swollen to twice its normal size, and the patient noted a definite nodule on the left side of the tongue. Over the surface of the tongue were many small white spots which on healing left a small linear trench. A sanguinopurulent discharge from the mouth was present, and the lingual lesion persisted until his admission to the University Hospital on Oct. 19, 1944. Two months prior to admission a pustular eruption had developed on the chin and a crusted lesion in the right nares. The patient had lost 20 pounds (9 Kg.).

On physical examination the patient did not appear acutely ill. The temperature was 98.6 F., the pulse rate 72, the respiratory rate 16 and the blood pressure 120 systolic and 80 diastolic. There was a crusted, fissured lesion involving the lateral mucous membrane of the right nares. Large firm papules 4 to 7 mm. in diameter, some with pustular or vesicular elements, were present over the chin. There was an incisional scar in the left lower cervical region, and the anterior cervical and submental lymph nodes on the left were enlarged and firm but not tender. On the left side of the tongue was a large fungating lesion, which measured 2.5 by 5 cm. (figs. 5 and 6). This lesion was firm, extremely tender and grooved from the impression of the teeth. It bled easily. The tongue was freely movable, and no other lesions were present on the buccal or pharyngeal mucosa. Indirect laryngoscopic examination revealed a nodule, believed to be cystic in nature, on the epiglottis. The patient was not hoarse, the liver and spleen were not palpable and the remainder of the examination revealed normal conditions.

Microscopic sections of the lesion on the tongue showed decided hyperplasia of the prickle cells with a heavy inflammatory infiltrate consisting mainly of plasma cells with some lymphocytes and eosinophils widely distributed throughout the lingual tissue. Repeated biopsies revealed a similar picture, and in the fourth specimen, taken Dec. 1, 1944, the yeastlike organisms of H. capsulatum were identified intracellularly. Monthly biopsies thereafter in every instance revealed the organism, although by Feb. 28, 1945, at which time the last specimen was obtained, the tongue was essentially normal.

After the diagnosis had finally been made, on Dec. 22, 1944, the patient was given sulfadiazine orally and received 6 Gm. a day until March 27, 1945, a total dose of 576 Gm. No reaction to the drug was perceived. The course of the disease was one of steady clinical remission. The cutaneous lesions cleared in several weeks after sulfadiazine therapy was instituted, and by the early part of January 1945 definite improvement was noted in the tongue. By February 1945 the tongue was normal in appearance, and the patient felt no pain or other symptoms. Nevertheless, treatment was continued until the end of March 1945, at which time he was discharged but advised to continue taking sulfadiazine and to return in four weeks. Thus far he has not returned to the clinic.

Case 3.—C. W., a Negro man aged 23, had been well until February 1942, when a penile sore developed. The only symptoms were a loss of 10 pounds (4.5 Kg.) in weight and occasional discomfort at the site of the lesion. The patient was admitted to the Michigan Rapid Treatment Center [14] on March 6, 1945.

There was a fairly extensive ulceration of the prepuce with two round shallow ulcers, one at the anterior and one at the posterior border (fig. 7). Considerable erythema and erosion were present on the glans penis. There was little tenderness

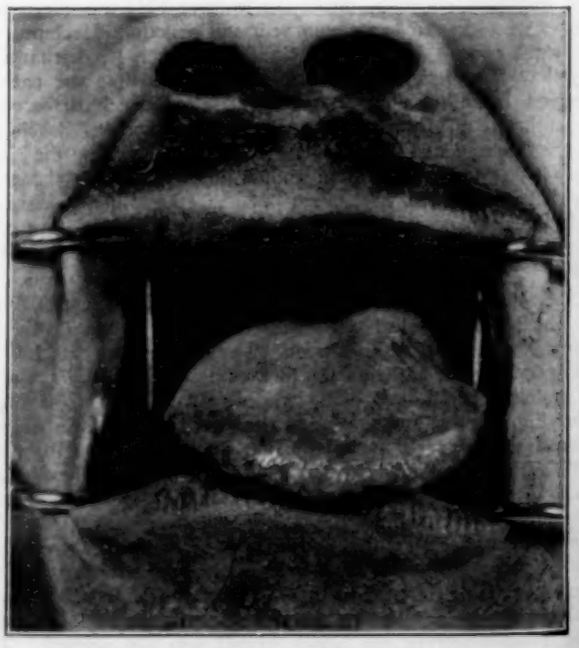


Fig. 10 (case 2).—Appearance of the tongue following the ingestion of 576 Gm. of sulfadiazine over a period of approximately three months.

and only a slight degree of induration. The inguinal lymph nodes were slightly enlarged bilaterally, discrete, not tender and of a rubbery consistency.

An intracutaneous test using a broth filtrate of a culture of H. capsulatum was negative after twenty-four, forty-eight

14. Ryan, N. W., Medical Officer in Charge, Michigan Rapid Treatment Center, through whose courtesy this case report is included in this paper.

and seventy-two hours. The test was later repeated with a different histoplasmin and was positive.

Biopsy material from the penile lesion revealed hyperplasia and ulceration of the epidermis. In the cutis at the base of the ulcer the sections showed a chronic infectious granuloma with an infiltration of lymphocytes and a few polymorphonuclear neutrophils, occasional giant cells and areas of caseation necrosis. With Giemsa stain the yeastlike form of H. capsulatum was identified in the reticuloendothelial cells. Similar microscopic observations were made in biopsy specimens from the inguinal lymph nodes, and H. capsulatum was again identified.

Cultures of material from the penile lesions on Sabouraud's medium at room temperature produced the characteristic white fluffy growth, and many tuberculate chlamydospores were found on culture mounts. Blood agar cultures at 37 C. produced the budding form of the organism.

During the period of hospitalization, which extended over a span of approximately four months, a sharply circumscribed, brownish, pruritic papule, about the size of a half dollar, with a superimposed bulla, developed over the left palm (fig. 12). Cultures from and biopsy of this lesion did not reveal H. capsulatum, and within a few weeks it had cleared completely.

Treatment consisted initially of the intramuscular administration of 5.1 million units of penicillin in divided doses over a period of nineteen days. Subsequently the patient was given 522 Gm. of sulfadiazine during an interval of eighty-seven days.

Several subsequent biopsies of the penile lesion were productive of only one alteration in the basic observations—the pathologist expressed the opinion that there appeared to be fewer organisms than in specimens obtained before treatment. At the last examination in April 1947, the penis was found to be enlarged because of a chronic lymphostasis. In the areas of previous ulceration depigmentation was present, but there was no apparent clinical activity. A biopsy specimen did not contain demonstrable organisms of H. capsulatum.

The patient was released from the hospital to continue, under supervision of his local physician, the ingestion of 4.0 Gm. of sulfadiazine each day. At the last examination in April 1946 the disease process remained limited to the penis. The ulcers had healed. The penis was enlarged because of a chronic lymphostasis. In the areas of previous ulceration depigmentation was present.

REVIEW OF THE CUTANEOUS LESIONS OF HISTOPLASMOSIS

In addition to the 3 cases reported in this paper 21 other cases presenting cutaneous lesions which were presumably associated with an infection of histoplasmosis have been reported (table 1). Histoplasma capsulatum was actually identified in the skin by microscopic section or by culture in 12 instances. Of the remaining 12 cases, 3 involved only purpura (cases 19, 20 and 21 in table 1); in 2 the description of the lesions was entirely inadequate (cases 1 and 4 in table 1); and 3 instances were most probably the cutaneous lesions of the complicating diseases (cases 10, 14 and 18 in table 1). One case (case 11 in table 1) presented a toxic erythema as the only cutaneous manifestation. The remaining 3 cases (cases 5, 22 and 23 in table 1) were probable or at least possible examples of cutaneous histoplasmosis, although the causative fungus was either not found or not searched for in tissue from the lesions of the skin. Of the 12 actual and 3 possible cases of cutaneous histoplasmosis, 13 had granulomatous or ulcerative type of lesions, 3 presented nodular lesions, 3 had papulonecrotic type of lesions, and 2 had abscesses. In 10 cases the cutaneous lesions were distributed over the face and neck, and in 6 of these they were directly adjacent to the orifices. Lesions were present on the trunk in 4 cases, on the extremities in 4 cases, on the male genitalia in 2 cases and were generalized in 1 case.

Considered in the differential diagnosis of the disease in the preceding 15 cases were gumma, primary syphilis, basal cell epithelioma, tuberculosis cutis, blastomycosis, chromoblastomycosis, granuloma inguinale and leishmaniasis.

REVIEW OF THE LESIONS OF THE MUCOUS MEMBRANE

In addition to case 2 of this paper we have found mentioned or described in the literature 23 cases of histoplasmosis in which involvement of those mucosal surfaces directly adjacent to the skin has occurred. In 7 of these 23 cases these lesions coexisted with cutaneous involvement and have been described previously in conjunction with the lesions of the skin (cases 4, 7, 15, 16, 18 and 20 in table 1).

A summary of the 24 cases with lesions of the mucous membrane reveals that the organism was actually recovered from the mucosal site in 17 instances and was found in directly adjacent cutaneous lesions in 1 case. Of the remaining 6 cases, 1 was definitely granulomatous and possibly of mycotic origin (case 4 in table 2); 1 was associated with erythema multiforme and clinically resembled a Vincent's angina (case 12 in table 2); 2 were associated with a coccogenic infection type of reaction (cases 19 and 20 in table 2), and 2 were merely cited and not described (cases 21 and 22 in table 2). This leaves for evaluation 1 probable and 18 definite cases of histoplasmosis of the mucous membranes adjacent to the skin. Of these 19 cases, 7 involved granulomatous lesions and 16 ulcerative lesions, which for the most part were painful. Nodular lesions ranging in size from several millimeters up to a walnut were described in 5 cases, and these were tender in 3 instances. Hemorrhagic patches or crusts of various sizes were noted in 4 cases; fissures were present in 2 cases and perforation of the nasal septum in 3 cases.

Fig. 11 (case 3).—Ulcerations resembling syphilitic chancres at the anterior and posterior borders of the prepuce. There was moderate edema of the foreskin.

Lesions were present in the nose in 4 instances, on the tongue in 7, on the buccal and labial mucosae in 5, on the palate in 5, on the gingivae in 3 and about the hypopharynx in 7. Considered in the differential diagnosis were syphilis, carcinoma, leukemia, tuberculosis and leishmaniasis.

TREATMENT

Of the many agents used in the treatment of histoplasmosis, only antimony and sulfonamide compounds have thus far offered any encouragement in those cases in which progression beyond a purely localized involvement has occurred. Meleney [15] cites Mantel, Troy and Kendall, who treated a patient with histoplasmosis with an organic antimony compound [16] in the mistaken belief that they were dealing with an infection due to leishmania. The patient had a clinical remission while under treatment with this drug. Simson and Barnetson's [17] patient showed definite clinical improvement following the administration of an antimony compound, and as yet there has been no report of this patient's death. In the case of Palmer and others [18] the patient failed to tolerate an antimony compound [16] after the fifth injection. Several other cases [19] in which antimony compounds were unsuccessfully used have been recorded.

In case 2 of this paper the lesion of the tongue completely disappeared under continued sulfadiazine therapy, but even after a prolonged course of treatment microscopic sections still revealed H. capsulatum, and we have been unable to obtain the patient's readmission to the hospital. Other cases in which sulfonamide compounds, usually in small amounts, have been used unsuccessfully are reported.[20]

In case 3 the patient experienced healing of the penile ulcerations under sulfadiazine therapy. Repeated biopsies were all positive for H. capsulatum until April 1947, when all sections were negative. Chronic lymphedema and depigmented scars were residual. The patient appeared in good health when last seen, in April 1947.

Radium and roentgen therapy have been of value only in cases in which the lesion of histoplasmosis was entirely confined to a localized site. This is illustrated in the case cited by Parsons and Zarafonetis,[4] in which apparent cure was effected by radium therapy. Surgical intervention would probably have been equally effective in this case but was valueless in Moore and Jorstad's [21] case, in which wide excision was performed twice but further microscopic spread of the organism had undoubtedly occurred. In another instance [22] the local lesion of the tongue healed under radium therapy but the patient died several months later. No autopsy was performed, so the cause of death was not determined. In Humphrey's [19b] case temporary palliation was obtained from irradiation of the long bones, and in another case [19c] tenderness of the lingual lesion was temporarily alleviated following roentgen therapy. In another instance [4] roentgen radiation gave no relief.

15. Meleney, H. E.: Histoplasmosis (Reticuloendothelial Cytomycosis): A Review with Mention of Thirteen Unpublished Cases, Am. J. Trop. Med. **20**: 603 (July) 1940.
16. Stibamine glucoside ("neostam").
17. Simson, F. W., and Barnetson, J.: Histoplasmosis: Report of a Case, J. Path. & Bact. **54**: 229 (July) 1942.
18. Palmer, A. E.; Amolsch, A. L., and Shaffer, L. W.: Histoplasmosis with Mucocutaneous Manifestations, Arch. Dermat. & Syph. **45**: 919 (May) 1942.
19. (*a*) Baliña, P. L.; Negroni, P.; Basq, P., and Herrara, J. A.: Histoplasmosis de Darling: Primer caso sud-americano, Rev. argent. dermatosif. **25**: 491, 1941. (*b*) Humphrey, A. A.: Reticuloendothelial Cytomycosis (Histoplasmosis of Darling), Arch. Int. Med. **65**: 909 (May) 1940. (*c*) de Almeida, F., and da Silva Lacaz, C.: Cogumelo do gênero Histoplasma isolado de lesões de cromomicose: Associação de fungos nos lesões, Folia clin. et biol. **11**: 65, 1939. (*d*) Dean, L. W., Jr.: Histoplasmosis of the Larynx, Arch. Otolaryng. **36**: 390 (Sept.) 1942. (*e*) Kemper, J. W., and Bloom, H. J.: Histoplasmosis: Report of a Case, J. Oral Surg. **2**: 167 (April) 1944. Parsons and Zarafonetis.[4]
20. (a) Anderson, W. A. D.; Michelson, I. D., and Dunn, T. M.: Histoplasmosis in Infancy: Report of a Case, Am. J. Clin. Path. **11**: 344 (April) 1941. (*b*) de Almeida and da Silva Lacaz.[19c]
21. Moore, M., and Jorstad, L. H.: Histoplasmosis and Its Importance to Otolaryngologists: A Review with Report of a New Case, Ann. Otol., Rhin. & Laryng. **52**: 779 (Dec.) 1943.
22. Henderson, R. G.; Pinkerton, H., and Moore, L. T.: Histoplasma Capsulatum as a Cause of Ulcerative Enteritis, J. A. M. A. **118**: 885 (March 14) 1942.

COMMENT

At present the central portion of the United States appears to be the endemic focus of histoplasmosis. Parsons and Zarafonetis [4] have pointed out that 41 of the 71 cases reviewed by them were from this area, and 10 of these were from the state of Michigan. To these latter 10 cases may be added the 3 reported in this paper and 3 additional cases observed at the University Hospital which have not yet been reported.[23]

For the purpose of classification histoplasmosis may be divided into two categories. First, cases in which the portal of entry is primary in the skin and adjacent mucous membranes and second, those cases in which the portal of entry is a systemic one via the respiratory or gastrointestinal system and the cutaneous or mucosal lesions which do occur are from secondary invasion. Case 3 of this paper and the patient [4] whose lesion healed on radium therapy [4] are examples of the primary invasion, whereas case 1 of this paper and other cases [24] fall into the latter group and were the result of a hematogenous dissemination of the organism. However, except in those instances in which the lesion is so localized that complete extirpation will remove the disease, this classification is of far less prognostic significance than in blastomycosis. In the latter disease systemic invasion is usually fatal, but primary cutaneous blastomycosis may persist untreated for long periods of time and yet seldom causes death. In histoplasmosis any untreated lesion, whether primary or secondary, may go on to dissemination and finally a fatal termination, and the present methods of therapy have done little to improve this prognosis.

In addition to the actual invasion of the mucocutaneous tissues by H. capsulatum, the possibility of toxic and absorption type of cutaneous reactions must be considered. A toxic response to the systemic infection may well have been behind the purpuric, roseolar, vesicular and erythema-multiforme-like manifestations described in cases in which no organisms were recovered. In case 3 the patient had a fixed eruption on the left palm. However, the part played by drugs or other extraneous factors cannot be eliminated in several of these cases.

In differential diagnosis it is important to consider histoplasmosis in patients with anemia, leukopenia and fever, particularly if lymphadenopathy, splenomegaly or hepatomegaly are also present. No single symptom or group of mucocutaneous manifestations which are as yet apparent from the limited case reports would enable one to make a definite clinical diagnosis. The predominant lesion is an ulcerative granuloma which is usually covered by a crust, often painful and has little induration or peripheral inflammation. Neither the miliary tiny peripheral abscesses and sharply sloping vegetative border of blastomycosis nor the arcuate configuration of gummas are in evidence in most instances. Tuberculosis cutis must be differentiated from the papulonecrotic form of histoplasmosis, which in 1 case [19a] even presented apple-jelly nodules. Mucocutaneous leishmaniasis is perhaps the closest clinical entity to histoplasmosis, and here confusion of the two diseases in the laboratory is also a possibility. However, for the most part the geographic distribution of the two diseases has become quite different in the last few years. In Negroes lesions about the genitalia require differentiation of histoplasmosis from granuloma ingui-

23. Omitted in this report because of the absence of involvement of the skin or mucous membrane.
24. Emmons and Olson.[7] Meleney.[15] Palmer, Amolsch and Shaffer.[18]

nale. Histoplasmosis is associated with regional adenitis, which helps to differentiate it from granuloma inguinale. As in case 3 of this paper, genital lesions of histoplasmosis may simulate a syphilitic chancre, but persistence of the lesion will differentiate the two.

It is of interest that in 2 instances [25] histoplasmosis was associated with leukemia and in 1 with Hodgkin's disease.[4] A clinical differentiation between leukemia cutis and histoplasmosis was difficult, and even though H. capsulatum was found in the lesions, they may have originally been leukemic in nature. Histoplasmosis, particularly of the tongue, has been confused in several instances with carcinoma. In far advanced cases, the immobilization of the tongue has not been noted in histoplasmosis.

Other diseases that must be considered in a complete differential list include moniliasis, tuberculosis cutis orificialis, rhinosporidiosis, lupus vulgaris, sporotrichosis and coccigenic abscess or impetigo in those few cases characterized by suppurative processes. In addition South American blastomycosis, oriental sore and other tropical diseases merit consideration. An unequivocal diagnosis on a clinical basis alone cannot be made, but it can be strongly suspected, and proof can be obtained by histologic study of the lesions and by cultures made from infected material.

ABSTRACT OF DISCUSSION

DR. CARL W. LAYMON, Minneapolis: As was pointed out, histoplasmosis is essentially a systemic disease. I think most dermatologists have had very little experience with it. Dr. Curtis' paper is especially valuable from the point of view of differential diagnosis. After his presentation, it is easy to understand that this disease can mimic many other dermatoses and diseases of the mucous membrane. Christie and Peterson, of Nashville, yesterday in the Section on Pediatrics presented a paper on this subject. They, too, stressed that in patients with pulmonary calcification who had negative tuberculin tests, there was a high incidence of positive reactions to the histoplasmin test, so that in all probability there may be a benign or attenuated form of this organism such as Dr. Fred Weidman mentioned in discussing Dr. John Lamb's paper. As Dr. Curtis mentioned, a lapse of several years (from 1906 to 1925) occurred between the original description by Darling of 3 cases and the fourth case. It just happened that this fourth case was reported by two men from the University of Minnesota, Drs. Watson and Riley. It is of interest that one of the early cases occurred in a leprous person and in all probability the portal of entry in that case was through a lepromatous nodule. Another point which is interesting to speculate about is that there are many more cases of histoplasmosis in adult males than in adult females. Some believe that probably the adult male contracts the organism outdoors and then tracks it through the house and in that way the children playing and crawling around on the floor may get the disease. It has occurred in infants and young children, but it is infrequent in women. In the patients below the age of 10, the sex ratio is about equal in contrast to a 5 to 1 ratio of males over females. Since the central part of the United States, and especially Michigan, seems to be an endemic focus of this disease, Dr. Curtis has had really an unusually wide experience with it, and we are all fortunate to hear the results of his studies and observations.

DR. JOHN F. KESSEL, Los Angeles: Dr. Curtis' paper is an excellent summary of histoplasmosis, with special reference to involvement of the skin and mucous membranes of man. His differentiation of these types of histoplasmosis into primary and secondary brings this disease into line with other systemic mycotic infections; for example, (1) coccidioidomycosis, in which cutaneous lesions are usually secondary to the disseminated type of disease, but which also may occasionally be primary in nature; for instance, a case in Los Angeles some years ago, in which the local lesion was on the shoulder. After diagnosis, cauterization was performed and the patient had no further disturbance and (2) torulosis, in which the lesions most commonly observed are in the central nervous system, but in which occasional local lesions without involvement of the central nervous system have been reported; for instance, the case reported by Drs. John C. Wilson and F. M. McKeever in Los Angeles, in which there was an infection of the knee and also a cutaneous lesion near the nipple. Amputation of the leg just above the knee and local roentgen therapy of the lesion of the skin resulted in cure. Histoplasmosis possesses certain parallels with leishmaniasis, which also involves the reticuloendothelial system. In leishmaniasis several different strains or species of organism are recognized, such as Leishmania donovani of kala-azar, which is primarily a systemic infection, and Leishmania tropica of oriental sore, which is a cutaneous infection. It is possible that differences in strain likewise occur in the histoplasma. Studies which I have in progress with cryptococci, some isolated from lesions of the central nervous system and others from cutaneous lesions, indicate that differences between strains occur in this fungus. It is of special significance that primary cutaneous and mucosal histoplasmosis tends to become generalized more frequently than is the case in certain other mycotic infections, for example, blastomycosis. Three cases of histoplasmosis have been reported from the state of California. In the first case the patient had previously resided in Louisiana, in the second in Tennessee and in the third in the North Central United States. These observations support the impression that histoplasmosis is not indigenous to the Pacific Southwest. Of these 3 cases only in the third was there exhibited a mucosal lesion which involved the tongue. The question of the specificity of the histoplasmin test and its value in diagnosis or survey work is still open for study. The workers who have reported on this so far have all been careful investigators, and yet there is some difference of opinion among them.

DR. FRANCES KEDDIE, San Francisco: I am sorry that Dr. Miller is not here to discuss this with you. He and I are interested in histoplasmosis because of the case we saw here in San Francisco. In going over the literature of the 88 cases we found reported, 45 patients had lesions on the skin or mucous membranes, and 28 of these had lesions on the tongue, on the oral mucosa, in the larynx or in the pharynx. These lesions began as papules and frequently went on to ulceration. These usually were not tender when they were papules but became tender when they ulcerated. Sometimes the process was extensive, and in those cases there was destruction of the larynx and of the pharynx. The lesions on the cutaneous surfaces were much like those in the mouth, in that they began as papules and frequently went on to ulceration, forming a sharply punched-out ulcer. In some instances these ulcers had been present from eight to sixteen years. Purpura was mentioned in a few instances. It was usually terminal and occurred principally in children. The lesions that interested us particularly were those which resembled secondary infection, such as impetigo, furuncles and abscesses. These were mentioned in 4 patients who had generalized histoplasmosis; it was not indicated whether the organism was recovered from these lesions that looked like secondary infection. In 4 instances there was dermatitis, either local or generalized, and in 1 case of Hansmann and Schenken a generalized dermatitis had been present for sixteen years. The diagnosis was made by a biopsy from the skin. I have been impressed in going over the literature that the diagnosis can be made by sections from the skin and by finding the organism present in those sections. The patient we saw was a problem. He had histoplasmosis of the tongue, which we diagnosed by biopsy. He had had a lymph node removed from his neck six years previously, which was diagnosed Hodgkin's disease, and in getting this section and going over it after we made our diagnosis, we were able to find a few cells that resembled histoplasma. We took an auxiliary lymph node and found histoplasma in that. The patient had fever and was emaciated. He was in the hospital. We assumed that his generalized infection was histoplasmosis, although we were never able to find histoplasma in the blood

25. (a) Riehl, G.: Durch pathogene Sprosspilze bedingte Granulome, Arch. f. Dermat. u. Syph. **148**: 392, 1925. (b) Williams, R. H., and Cromartie, W. J.: Histoplasmosis: Report of a Case, Ann. Int. Med. **13**: 2166 (May) 1940.

or in bone marrow smears. We gave him penicillin and also sulfadiazine in large doses. We also treated him with stibamine glucoside ("neostam"). He died from what we thought was a terminal bronchial pneumonia. We discovered at autopsy that his histoplasmosis was probably of a benign form. He had no histoplasma present any other place in his body. He had Hodgkin's disease of the lymph nodes, a Hodgkin's sarcoma of the liver and of the spleen, and he had a miliary tuberculosis which had become disseminated. So it is easy to understand that our attempts at treating histoplasmosis had little effect.

DR. FRED D. WEIDMAN, Philadelphia: In addition to the intrinsic value of this paper I am sure that all of us have been delighted in its manner of presentation. It stimulated thought in many directions. The histologic sections of 1 of the cases demonstrated the presence of granulomas in the liver, which histologically appear to be those of tuberculosis. I wonder whether the patient had tuberculosis in addition to histoplasmosis. I think the time is ripe to advance the theory at least that preexisting, particularly granulomatous diseases, can act as predisposing factors for the superimposition of a fungous infection. Dr. Keddie has just cited such a case, in which Hodgkin's disease was associated with fungous infection in the tongue, and a number of years ago Dr. Fitchett and I reported a case of Hodgkin's disease in which torulosis was present. I wonder whether such a thesis could be reconciled with what is so notorious in immunologic tests for fungous disease, particularly the cutaneous reactions. In the literature time and time again cross reactions are reported between the tuberculin, coccidioidin, blastomycetin tests and so forth. Does this connote the presence of antigens common to Mycobacterium tuberculosis (or other micro-organisms) and the fungous agent, and does the antigen in the Myco. tuberculosis or other micro-organism sensitize the person, more easily furthering the development of a fungous infection? The second point I would like to raise—Dr. Kessel anticipated me—is the matter of the future development of the antigens for skin testing. It is remarkable that physicians have been confining themselves to the employment of material from cultures. Now, all are aware of the extreme dimorphism of the fungi; most of them appear different in the test tube than in tissues. This must connote a difference also in the physiology and, with that, the production of differing antigenic substances. Isn't it more reasonable to assume that the specific antigens in the case would be more faithfully represented in the tissue form of the parasite than in the culture tube form? This does not raise any serious difficulty; tissue forms can be obtained. In the lepromin and the Frei tests, for example, tissue is used, but the tissue forms of the fungi can be secured on blood agar in the incubator and also in the chick embryo. I would suggest that increasing attention be paid in this direction in further attempts to improve the specificity of immunologic tests for the fungi.

DR. HARRY L. ARNOLD, Honolulu, Hawaii: I would like to extend slightly Dr. Weidman's remarks on the question of depression of production of antigens by tuberculosis and subsequent infection with some other organism. It might be well to allude to another possible explanation of these relationships, namely, the involvement of the reticuloendothelial system, which must be considered whenever one is considering the production of antigen. It is notorious that in leprosy, which is, in lepromatous form at least, essentially a reticuloendothelial disease, tuberculosis has an extremely high incidence. About 50 per cent of patients with lepromatous leprosy contract, and die of, tuberculosis; and histoplasmosis is also a disease which essentially involves reticuloendothelial cells. Possibly in this disease, as perhaps also in leprosy, there is a blocking of the reticuloendothelial system with resultant increased susceptibility to another infection.

DR. LOUIS A. BRUNSTING, Rochester, Minn.: This has been a stimulating discussion of a condition in which the skin reflects signs of systemic disease. I am sure that none is better qualified to do this than Dr. Curtis. Perhaps at the Centennial Program of the American Medical Association next year the Section on Dermatology may join one of its day's meetings with the Section on Internal Medicine or Pathology to present a symposium on the systemic aspects of cutaneous disease. The subjects of acute disseminate lupus erythematosus and sarcoidosis, among others, would lend themselves well to such a discussion. As Dr. Curtis pointed out, the early lesions of histoplasmosis may be visceral or may appear first on the skin or mucous membranes, and the differential diagnosis includes carcinoma, tuberculosis, sarcoidosis or rhinoscleroma. The first step toward a correct diagnois is to keep histoplasmosis in mind; repeated cultures and biopsies may be needed before the organism is identified. The histoplasmin skin test deserves a wider application than it has had in the past, particularly in unusual ulcerative processes of the mouth and nasopharynx. A positive or negative skin test should not be given too much weight by itself but should be interpreted in respect to the overall picture.

DR. ARTHUR C. CURTIS, Ann Arbor, Mich.: It is not my desire to leave the impression that the sulfonamide drugs are specific for histoplasmosis. The last 2 cases in our report were benign forms of histoplasmosis, but 2 cases of benign histoplasmosis showing evidence of healing under sulfadiazine therapy are not sufficient evidence to accredit the drug for these results. The statements of Drs. Weidman and Arnold in regard to the relationship of granulomas to other infectious diseases were most interesting. The first patient did have tuberculosis; in fact, the organism was demonstrated in the tissue of the liver and by guinea pig inoculation. Other areas of the liver disclosed Histoplasma capsulatum. It is also striking that of 88 cases of histoplasmosis reported 4 have been associated with some form of lymphoblastoma. Reports have shown the association of tuberculosis and histoplasmosis to be unusually common.

NEUTRALIZATION TESTS FOR DIAGNOSIS OF HUMAN VIRUS ENCEPHALITIDES

PETER K. OLITSKY, M.D.
and
J. CASALS, M.D.
New York

The virus neutralization test is important because it can be used to help determine the prevalence of a disease, the geographic dissemination of its virus, the titer of antibody in an antiserum or the principles underlying the immunologic factors of an infection. One can with known virus demonstrate its specific antibody, and one can with known antibody reveal the identity of a virus. The test is simple in application when an appreciable amount of antibody is present; the antibody is detected by adding undiluted fluid, such as blood serum, which contains suspected antibody to suspensions which contain a known amount of virus. After varying periods of contact at certain temperatures, the mixture is injected by definite routes into selected species of animals, which are then watched for virus effect (i. e., no neutralization) or for no effect whatever (i. e., neutralization). However, when the serum contains antibody sufficient to neutralize only 1, 5, 10 or even 25 units of virus instead of hundreds of thousands of units, then it is like the task of Sisyphus—without end and, for the moment, without hope—to explain or indicate the significance. This is not intended, however, as a disquisition on the significance of serums containing borderline or traces of neutralizing substance. This is a report on the methods of performing the test which laboratories have evolved from experience; it will give a fairly accurate picture of a practical test and some of the underlying principles.

THE VIRUS ENCEPHALITIDES

The subject is limited to the human virus encephalitides. They are as now identified: (*a*) primary virus infections; (*b*) suspected, primary virus infections, and (*c*) virus encephalitides caused by familiar viruses not

From the Laboratories of the Rockefeller Institute for Medical Research.

ordinarily encephalitogenic. Poliomyelitis requires special consideration and will not be discussed here.

The primary virus encephalitides comprise Eastern equine encephalomyelitis, Western equine encephalomyelitis, Venezuelan equine encephalomyelitis, St. Louis type encephalitis, Japanese B encephalitis, Russian Far East (tick-borne, spring-summer) encephalitis, acute hemorrhagic meningoencephalomyelitis (leukoencephalitis), lymphocytic choriomeningitis, pseudolymphocytic choriomeningitis, swineherd's disease, louping-ill, acute encephalitis due to rabies and Sabin B virus. The first six are known as the summer, or epidemic, encephalitides (of which Eastern and Western equine and St. Louis encephalitis are prevalent in this country); the remainder, as endemic virus encephalitides. They have been called the arthropod-borne virus encephalitides by Hammon and Reeves.

The suspected primary virus encephalitides are newly discovered, and their role is significant because antibodies have been found in the blood of man and the viruses are neurotropic in laboratory animals. Clearcut clinical infections of the encephalitic type are yet to be seen. The viruses are as follows: West Nile, Bwamba fever, Semliki forest, Bunyamwera and Hammon-Reeves, California. The first two have been recovered from the blood of man, the remainder from mosquitoes only. Other suspected primary virus encephalitides are von Economo's disease and acute disseminated encephalomyelitis, the virus etiology of the two is not as yet established.

Virus encephalitides can be caused by ordinarily non-encephalitogenic viruses, which are those of herpes simplex, measles, lymphogranuloma venereum, mumps and infectious mononucleosis (probably due to a virus).

While human secondary or postinfection encephalitis has not been shown as yet to be caused directly by a virus, the malady does follow within the definite time of a few days to a few weeks various virus infections, such as measles, mumps, influenza, chickenpox, vaccinia, smallpox, infectious hepatitis and after vaccination against smallpox and rabies. The group is here mentioned because its differentiation from the virus encephalitides is sometimes required.

Although this list of encephalitic infections is lengthy, certain of the known general principles, the practical application and the methods of procedure of the neutralization test may be applied to almost all the mentioned maladies and their viruses; later on some noteworthy exceptions to general rules will be brought out.

CERTAIN GENERAL PRINCIPLES

The Time Factor.—At the outset it is admitted that the nature of the neutralization reaction is unknown. It is generally accepted, however, that the presence of significant amounts of neutralizing antibody indicates previous exposure to and infection by a virus, even though in many instances in the absence of apparent disease. This factor is the basis of the "two or three phase" test; i. e., under ideal conditions a specimen of serum obtained as early as possible during the acute phase of illness, another one or two weeks after the onset and a third, if necessary, taken still later, three to eight weeks after the onset, are subjected to the neutralization test. Since infection by a virus may be clinically inapparent, normal persons may show specific neutralizing antibody; hence a single positive specimen may be misleading, especially if the person has lived in areas in which the virus is endemic, as are St. Louis and Western equine virus in California and Washington (Buss and Howitt [1]; Hammon [2]). The reason for selecting the intervals from the earliest time to eight weeks after onset for test is that this antibody appears at varying times after infection with different viruses. In Western equine virus infection neutralizing antibody is evident as early as the fourth day after onset; in St. Louis and Japanese B encephalitis, three to seven days to three weeks; in lymphocytic choriomeningitis, not until about the sixth to eighth week after onset.

Comparative Tests.—It becomes apparent that the success of a diagnostic procedure of virus neutralization depends on the precision with which, in the comparison of serums obtained in the acute and convalescent stages of infection from the same patient, a definite increment of antibody in the later sample is revealed. To measure this increase in antibody (or in the protective power of an antiserum) one of two methods may be used. (1) Undiluted serum is tested against varying quantities of virus; for example, acute-phase serum may show no neutralization of as little as 10 units of virus, serum of one week after onset, may neutralize 100 units and that two weeks after onset 100,000 units of virus, the limit of this hypothetic test. At the limit, however, no difference between two different serums can be discerned, unless (2) the method of Morgan and Olitsky [3] is employed. They offered evidence to show that the capacity of undiluted serum to neutralize virus may not be different for different samples except by means of graded serum dilutions, in which a true antibody titration is made; then the finer shades or even pronounced degrees of difference between serums are manifested.

Animals Used and Route of Injection of Serum-Virus Mixtures.—There are two choices of laboratory recipients for serum-virus mixtures, when the neutralizing capacity of a serum is to be tested: first, the serum-virus mixtures are injected into an animal which is uniformly and highly susceptible. For the encephalitis viruses this is generally the albino mouse; however, for the Sabin B virus rabbits are used, and often for lymphocytic choriomeningitis the guinea pig is used. A second choice way is the injection of serum-virus mixtures into developing chick embryos (Burnet, Keogh and Lush [4]). As a rule the latter technic merely supplements the one employing animals or is used only for special purposes.

When the mouse is the animal of choice one takes into account its strain and age. A selectively inbred strain proved to be of high and uniform susceptibility, such as the Swiss W or the Rockefeller Institute strain, should be used; Casals and Schneider [5] have demonstrated that such animals may be essential for certain viruses. The age of the mouse is also important. It has been shown [6] that an increasing resistance develops in

1. Buss, W. C., and Howitt, B. F.: Human Equine Encephalomyelitis in Kern County, California, 1938, 1939 and 1940, Am. J. Pub. Health **31**: 935-944 (Sept.) 1941.

2. Hammon, W. M.: Encephalitis in Yakima Valley: Mixed St. Louis and Western Equine Types, J. A. M. A. **117**: 161-167 (July 19) 1941; correction, ibid. **117**: 802 (Aug. 30) 1941.

3. Morgan, I. M., and Olitsky, P. K.: Immune Response of Mice to Active Virus and to Formalin-Inactivated Virus of Eastern Equine Encephalomyelitis, J. Immunol. **42**: 445-454 (Dec.) 1941.

4. Burnet, F. M.; Keogh, E. V., and Lush, D.: The Immunological Reactions of the Filterable Viruses, Australian J. Exper. Biol. & M. Sc. (supp.) **15**: 231-368 (Sept.) 1937.

5. Casals, J., and Schneider, H. A.: Natural Resistance and Susceptibility to Russian Spring-Summer Encephalitis in Mice, Proc. Soc. Exper. Biol. & Med. **54**: 201-202 (Nov.) 1943.

6. Olitsky, P. K.; Sabin, A. B., and Cox, H. R.: An Acquired Resistance of Growing Animals to Certain Neurotropic Viruses in the Absence of Humora Antibodies or Previous Exposure to Infection, J. Exper. Med. **64**: 723-737 (Nov.) 1936. Sabin, A. B., and Olitsky, P. K.: Influence of Host Factors on Neuroinvasiveness of Vesicular Stomatitis Virus: Effect of Age on Invasion of Brain by Virus Instilled in Nose, ibid. **66**: 15-34 (July) 1937; III. Effect of Age and Pathway of Infection on Character and Localization of Lesions in Central Nervous System, ibid. **67**: 201-228 (Feb.) 1938.

growing animals to the peripheral (extraneural) injection of certain neurotropic viruses, although young and old animals are equally susceptible to the cerebral (neural) injection of the viruses. (It has since been demonstrated that only with the Venezuelan and Russian Far East types of the encephalitis viruses this "peripheral resistance" does not develop in mice with age.) To overcome this factor the intraperitoneal test for neutralization was devised (Olitsky and Harford [7]); this is generally a more sensitive test than the intracerebral. However, the latter is ordinarily used because the intraperitoneal method requires mice which are 12 to 15 days of age. Again, the physiologic barriers to peripheral injection,[6] which appear with age, may develop irregularly in some mice: therefore twice as many animals, or more (i.e., instead of 5, 10 or more for each dilution), must be injected; and to provide mice of definite age (dated mice) a large, expensive organization is essential. Lennette and Koprowski [8] in elaborating the peripheral test have shown, moreover, that for the St. Louis type encephalitis virus the injection of serum-virus mixtures subcutaneously into mice 3 days of age or intraperitoneally into those 8 days of age yields a still more sensitive result—several hundred thousand times greater neutralization capacity. For Eastern and Western equine and Japanese B encephalitis viruses and West Nile virus the intraperitoneal test may be used in mice aged up to 14 days; for Venezuelan equine virus, up to 200 days.[8]

Specificity of Neutralization Test: Cross Reactions.—The specificity of the neutralization of a virus by its antiserum is generally accepted. There are, however, records of cross reactions, but these occur between or among viruses that have common characteristics which may be reflected possibly by common antigenic complexes. The cross reactions (also shown in complement fixation tests) between West Nile, St. Louis encephalitis and Japanese B encephalitis viruses indicate a relationship of the three infections (Smithburn; [9] Lennette and Koprowski; [10] Casals [11]). The serologic cross reactions are not pronounced, and the laboratory workers get around this obstacle by utilizing the fact that the homologous reactions are usually at a definitely higher level, especially when the peripheral neutralization test is performed in young mice.[10] More decided cross reactions (neutralization, complement fixation) occur between louping-ill and Russian Far East encephalitis viruses.[11] Here again, however, the homologous titers are always higher, and cross resistance tests by intracerebral injection exhibit definite difference between the two.

Definition of Unit of Virus.—When such crude materials as virus and antibody—one a suspension of nervous tissue and the other blood serum—with all their varying components are mixed, it is apparent that the results in terms of the number of virus particles neutralized are only approximate. No *deus ex machina* such as a highly refined statistical formula can express that number with absolute accuracy; Reed and Muench,[12] who have given a most valuable and useful method for equalizing chance variations and for obtaining a number indicating a sharper end point of neutralization, have expressed the opinion that such refined procedures "are hardly justified in view of the uncontrolled variables involved."

The numeric end point of virus activity is expressed as the 50 per cent mortality end point, called LD_{50}, which is calculated by the method of Reed and Muench and is designated by the logarithm to one decimal place, of the reciprocal of the end point dilution. Thus, if $10^{-6.5}$ dilution of a virus is the minimal amount which shows 50 per cent mortality of animals, the LD_{50} is 6.5. The neutralization index of a serum (or number of virus units neutralized) is the LD_{50} of control minus that of the test serum, expressed as the antilog of the difference. Thus, if the LD_{50} of control is 6.5 and the LD_{50} of test serum is 4, the difference is 2.5 and the neutralization index is the antilogarithm of 2.5, or 320. (The method of calculation is clearly shown by Paul [13]).

The use of LD_{50} units has simplified and standardized serologic procedures. When an author reports, however, that the neutralization index of a serum is, say, 125,260, he cannot mean that this serum is more protective than one the index of which is, for example, 125,000. The number shows only the order of magnitude. We [14] express the indexes of 1 to 50 as the nearest whole number, 50 to 100 as the nearest 10, 101 to 1,000 as the nearest hundred, 1,001 to 10,000 as the nearest thousand and so on. This practice is especially indicated because the method of Reed and Muench requires, for a more exact determination of the LD_{50} end point, the data for two dilutions above and two below the nearest 50 per cent dilution plus a terminal zero dilution in which all animals survived or, better, a complete titration—data not always available in reported computations.

The Role of Complement in the Neutralization Test.—It is not as yet known what part complement plays in neutralization tests either while the mixture of virus and its antiserum is in vitro before its injection into the animal or while it is in the body after inoculation. An article by Morgan [15] gives a full discussion of this problem. Morgan found that samples of serum stored at 4 C. (in a refrigerator) or heated at 56 C. for half an hour lose to a significant degree their capacity to neutralize Western equine virus, but fresh samples of serum which are frozen retain their full potency. Since it is possible to reactivate the serums that become inactivated on storage at 4 C. by the addition of fresh but not heated (56 C. for half an hour) guinea pig serum, Morgan concluded that complement plays the role in the restoration of the neutralizing capacity. At about the same time Whitman [16] reported the same observations; he was able to reactivate stored serums by the addition not only of fresh guinea pig serum but also of fresh monkey and human serum. Whitman refers

7. Olitsky, P. K., and Harford, C. G.: Intraperitoneal and Intracerebral Routes in Serum Protection Tests with the Virus of Equine Encephalomyelitis: Comparison of Two Routes in Protection Tests, J. Exper. Med. **68**: 173-189 (Aug.) 1938.

8. Lennette, E. H., and Koprowski, H.: Neutralization Tests with Certain Neurotropic Viruses: A Comparison of the Sensitivity of the Extraneural and Intracerebral Routes of Inoculation for the Detection of Antibodies, J. Immunol. **49**: 375-385 (Dec.) 1944.

9. Smithburn, K. C.: Differentiation of the West Nile Virus from the Viruses of St. Louis and Japanese B Encephalitis, J. Immunol. **44**: 25-31 (May) 1942.

10. Lennette, E. H., and Koprowski, H.: Antigenic Relationships of the West Nile, Japanese B Encephalitis, and St. Louis Encephalitis Viruses, J. Immunol. **52**: 235-246 (March) 1946.

11. Casals, J.: Immunological Relationships Among Central Nervous System Viruses, J. Exper. Med. **79**: 341-359 (April) 1944.

12. Reed, L. J., and Muench, H.: A Simple Method of Estimating Fifty Per Cent Endpoints, Am. J. Hyg. **27**: 493-497 (May) 1938.

13. Paul, J. R., in Simmons, J. S., and Gentzkow, C. L.: Laboratory Methods of the U. S. Army, ed. 5, Philadelphia, Lea & Febiger, 1944, p. 591.

14. Casals, J., and Olitsky, P. K.: Enduring Immunity Following Vaccination of Mice with Formalin-Inactivated Virus of Russian Spring-Summer (Far Eastern, Tick-Borne) Encephalitis: Correlation with Serum-Neutralizing and Complement-Fixing Antibodies, J. Exper. Med. **82**: 431-443 (Dec.) 1945.

15. Morgan, I. M.: Quantitative Study of the Neutralization of Western Equine Encephalomyelitis Virus by Its Antiserum and the Effect of Complement, J. Immunol. **50**: 359-371 (June) 1945.

16. Whitman, L.: The Role of Heat Labile Accessory Substance in the Neutralization of Western Equine Encephalomyelitis Virus by Human Immune Serum, J. Immunol., to be published.

to the component in normal serum which restores the neutralizing capacity as a heat-labile accessory substance.

The results of the work of Morgan and Whitman bear on those of the diagnostic neutralization test. For example, Morgan showed that an undiluted serum stored at 4 C. for four days neutralized between 100 and 1,000 LD_{50} units, or end point dilutions, of virus, while the same serum kept frozen neutralized 10,000 LD_{50} units. This definitely indicates that serum should be kept frozen until it is tested. Restoration of full neutralizing potency in a stored serum by means of the addition of complement, or heat-labile accessory substance (fresh, normal guinea pig, monkey or human serum), is not as yet in practice chiefly from the lack of a quantitatively standardized method of procedure; Whitman eliminates the enhancing element by heating serum samples at 56 C. for one-half hour and so measures in comparative tests only difference in heat-stable antibody. Finally, and more important, is the fact that in two or three phase serum tests, if the acute-phase serum is first frozen and later tested and the convalescent-phase serum is tested after storage, a positive case may be missed. Conversely, if the first serum is examined after storage and the second in fresh state or after freezing, a false positive may be recorded.

Screening Tests.—In laboratories which receive specimens for neutralization tests, screening tests are conducted to select positive serums for further study. This saves a large amount of labor and many animals. In two or three phase serum tests the second, or late or convalescent sample, may be tested first; if the result is positive then both early and late specimens may be further studied; if negative, the serum is marked "negative neutralization test."

It should be stressed again that screening procedures are used to select serums for further study. Each laboratory has chosen its own method, which is based on experience. The degree to which the serums of normal persons without history of encephalitis and/or exposure to the virus neutralize small amounts of virus is unknown. The effort is therefore focused on eliminating samples which give false positive results and selecting those with definite, unequivocal positive reactions. This defection (the failure to detect borderline results or traces of specific antibody) has not as yet disturbed the high value of the test for diagnosis and epidemiologic studies. Hammon,[17] in whose laboratory a great many tests are performed, finds each year that serums from several hundred patients who derive from an epidemic area have antibody in both phases, acute as well as convalescent, against Western equine and to a greater degree against St. Louis encephalitis viruses; this indicates the importance of a diagnosis on the basis of a complete titration of the acute as compared with the convalescent sample. One cannot depend on a screening test alone for positive diagnoses.

The screening-neutralization test is carried out in one laboratory with undiluted serum and 10 to 50 LD_{50} units of Western equine or St. Louis encephalitis viruses; if this test is positive a complete titration with normal serum controls is made on both acute and convalescent samples. In another laboratory 20 and 200 LD_{50} units of the encephalitis viruses are used, in a third about 1 and 300 LD_{50} units and in a fourth no screening is used but complete titrations are performed on all specimens.

17. (a) Personal communication to the authors. (b) Hammon.[2]

MATERIAL USED IN NEUTRALIZATION TEST

Animals.—Of the materials used in the neutralization test the animals have been reported in a prior paragraph (see under "Animals Used").

Serum.—It is important to bleed persons for test serum after several hours of fasting (for example, in the morning before breakfast or before meals) and to employ sterile technic. About 20 cc. of blood is withdrawn, and after it is clotted by keeping it at room temperature for one-half hour, the blood is centrifuged at 2,500 revolutions per minute for twenty minutes. Clear serum is then pipetted. If a preservative is needed a 1 : 50,000 dilution of phenyl mercuric borate [18] can be added (or 1 : 2,500 borate stock, 1 drop to each 1 cc. of serum, as an estimate). The serum is placed in a hard-glass ampule, which is sealed; if a test tube is used, it should be closed with a cork or rubber stopper and the top should be completely waxed. A glass container should be filled only to one-third its volume to prevent bursting during freezing. The container is kept at about minus 76 C. by means of carbon dioxide snow until tested. It should be sent to the designated laboratory by the fastest possible method, preferably in a vacuum jar holding solidified carbon dioxide. If this refrigerant is not available the serum should be sent fluid, provided it can reach its destination within thirty-six hours.

All these precautions are necessary: The freezing of serum, to maintain its antibody level and to standardize more than one sample for comparative tests from the same source; and obtaining clear, sterile serum to obviate a possible aggregation of virus particles (and thus a nonspecific reduction in titer), which cloudy, fatty or contaminated serum may bring about, and again to standardize more than one specimen from the same person.

Virus.—Of the encephalitis viruses, the St. Louis and Japanese B types are the least stable at room or ice box temperatures. All, however, maintain a satisfactory titer when kept frozen in a container holding solidified carbon dioxide at about minus 76 C., if they are quickly frozen first in a mixture of solid carbon dioxide and 95 per cent alcohol.

A pool of 10 or more brains obtained from mice which show signs but have not died of involvement of the central nervous system after experimental infection are collected and ground in a "Waring blendor" to a 20 per cent suspension in 50 per cent, or undiluted, normal rabbit serum (heated to 56 C. for one-half hour). The suspension is distributed in glass ampules, 1 or 2 cc. in each (after some is retained for titration); the ampules are sealed and quickly frozen; they are kept frozen in a container with carbon dioxide snow until they are used. (Unused virus in opened ampules is discarded.)

The strain of virus should be one that maintains its titer for long periods and is satisfactory as a test virus in that it gives a high neutralizing index. From time to time it should be examined (and compared with other strains of the same virus) for its activity, its maintenance of titer and its general reliability (Olitsky, Morgan and Schlesinger [19]).

18. Hammon, W. M., and Reeves, W. C.: Certain Bacteriostatic Agents Added to Sera Used in Diagnostic Tests for Neurotropic Virus Infections, Proc. Soc. Exper. Biol. & Med. **60**: 84-88 (Oct.) 1945.

19. Olitsky, P. K.; Morgan, I. M., and Schlesinger, R. W.: Vaccination with Various Western Equine Encephalomyelitis Viruses: Comparison as Antigens and as Test Inocula, Proc. Soc. Exper. Biol. & Med. **59**: 93-97 (May) 1945.

PROCEDURES OF THE NEUTRALIZATION TEST

The neutralization test now to be described is that performed in our laboratory for more than twenty years; it includes the modification which Drs. H. R. Cox, C. G. Harford, I. M. Morgan, A. B. Sabin and other associates have introduced from time to time.

Preparations of Dilutions of Virus and Serum.—The stored, frozen suspension when thawed offers a 1:5 dilution of virus, which with an equal amount of serum becomes a 10^{-1} dilution. From the thawed suspension, dilutions as needed of 1:50, 1:500 and so on are made for final virus dilutions of 10^{-2}, 10^{-3} and so forth. The diluent is 10 per cent rabbit serum in isotonic solution of sodium chloride. The tubes receiving virus are kept in a vessel containing ice in order to keep the material cold until the time for injection in the animal. Of each dilution to be tested, 0.2 cc. is placed in the tube for testing. To each is added 0.2 cc. of undiluted, negative human serum. (If this is not available 10 per cent normal rabbit serum can be substituted.) This is the control series; for the test series the unknown serum for diagnosis is added instead. The tubes are incubated at 37 C. (water bath) for two hours; then they are placed in ice water until the contents is injected intracerebrally in animals (5 mice at least for each dilution).

The dilutions of virus to be used as control are such that at the higher dilutions all animals will survive and at the lower all will succumb. For the test serum, dilutions should be employed which indicate either no neutralization or neutralizations of at least 1,000 LD_{50} units of virus. For example, if the LD_{50} of the virus employed is generally 10^{-5}, the control series should be made up with virus dilutions of 10^{-6}, 10^{-7}, 10^{-8} and 10^{-9} and the test serum series with dilutions of 10^{-4}, 10^{-5}, 10^{-6} and 10^{-7}. When two or three phase serums are studied in a comparative way, Hammon [17a] has advised the use of fivefold dilutions of virus instead of tenfold, as is done here and elsewhere.

Highest dilutions of the test series should be injected into animals first, and the control series should be introduced last. Mice are observed for ten days for the equine viruses, except for recent isolations, which may be delayed in effect; then fourteen days should suffice, as for St. Louis encephalitis virus. For Russian Far East and Japanese B encephalitis virus three weeks of observation are required. Animals that die within twenty-four hours in equine virus tests are presumed to have succumbed from nonspecific causes. In the case of other encephalitis viruses deaths occurring up to forty-eight hours should be considered nonspecific; deaths on the third and later days should be ascertained as being caused or not caused by the virus inoculated intracerebrally. Care must be taken to eliminate the characteristic Theiler's virus disease arising spontaneously in mice (flaccid paralysis; muscular atrophy; apparent well-being otherwise of the affected animal) after inoculation of the serum-virus mixtures of the neutralization test. Finally, in such cases as the Russian Far East encephalitis virus, in which the incubation period is prolonged over several days and the animals are highly susceptible to extraneural exposure to the virus, care should be taken to isolate the inoculated animals by dilutions, i. e., all mice receiving the same dilution should be placed in one box, and sick and dead mice should be promptly removed from the group. This precaution is to avoid secondary, contact infections not related to the material injected.[14]

If it is essential to obtain information concerning the significance of neutralization with low multiples of LD_{50} virus,[14] tests can be repeated by the more sensitive extraneural (peripheral) method of Olitsky and Harford [7] or its modification by Lennette and Koprowski,[8] as already mentioned; these tests, of course, require special facilities, as has been stated. Furthermore, by this method there may at times be a tenfold diminution in the titer of virus; the whole range of virus dilutions should therefore be included. The success of the test will depend on the use of larger numbers of mice: at least 10 for each dilution.

In comparative tests with acute and convalescent serums from the same person, in cases in which additional information is desired on the more exact antibody content, the method [3] of serum dilution may be pursued to advantage. When dilutions of the serum are carried out, the test may then be performed either with constant amounts of virus, e. g., 10 or 100 LD_{50} units, or with varying amounts of virus diluted fivefold or tenfold.

SUMMARY

A description is here given of the neutralization test for the diagnosis of human virus encephalitides, including remarks on certain of its general principles and the details of the technic employed in this laboratory.

Sixty-Sixth Street and York Avenue.

ROENTGENOGRAMS OF THORAX THAT SUGGEST CARCINOMA OF STOMACH

B. R. KIRKLIN, M.D.
and
EVA L. GILBERTSON, M.D.
Fellow in Roentgenology, Mayo Foundation
Rochester, Minn.

Diagnosis of early malignant lesions at the cardia of the stomach has long been considered difficult from both clinical and radiologic points of view. The cardia has been referred to as the silent region of the stomach because there are seldom any characteristic early symptoms of pathologic conditions of the cardia. During roentgenoscopic examination a lesion in this region can be overlooked unless the roentgenologist is thinking of it and proceeds with appropriate and thorough methods of search.

Until the recent years when improvements have been made in methods of anesthesia and particularly in the technical approach by transthoracic resection of the stomach, there has been little incentive for improvement of the means of diagnosis of carcinoma at the cardia because so little could be done therapeutically for patients with this disease.

Transthoracic resection of the stomach now has become a generally accepted surgical procedure, and a number of patients can be benefited materially if diagnosis is made early enough, before metastasis has occurred. For this reason any adjunct to early diagnosis is worthy of consideration.

ROENTGENOSCOPIC OBSERVATIONS

Roentgenoscopic diagnosis of carcinoma of the cardia has been described in the literature (Stewart and Illick,[1] Buckstein [2] and Kirklin [3]). In the majority of

From the Section on Roentgenology, Mayo Clinic.
Read before the Section on Radiology at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, July 3, 1946.

(Footnotes on next page)

cases the diagnosis may be made most readily by examination while the patient is in the vertical position. Then, in some cases, the diagnosis can be confirmed by examination of the patient while he is in the recumbent position. Small polypoid carcinomas at the cardia often will be missed if examination is made with the patient only in the recumbent or Trendelenburg position because small lesions may be obscured by the barium.

In many cases of carcinoma of the cardia the lesion can be recognized, or at least strongly suspected, at the beginning of roentgenoscopic examination of the stomach when the patient stands behind the screen and before the opaque meal is given. Normally the gas bubble at the cardia is smoothly symmetric and transradiant. A tumefactive mass which projects from the medial wall into the gas bubble can be seen at this time. More extensive tumefactive or infiltrative lesions may cause a deformity of the fundus of the stomach or even complete absence of the gas bubble.

Barium should be given slowly and each swallow watched as it passes through the lower part of the esophagus into the stomach. Signs of a lesion at the cardia for which the roentgenologist should look are: (1) distortion or partial stenosis of the lower part of

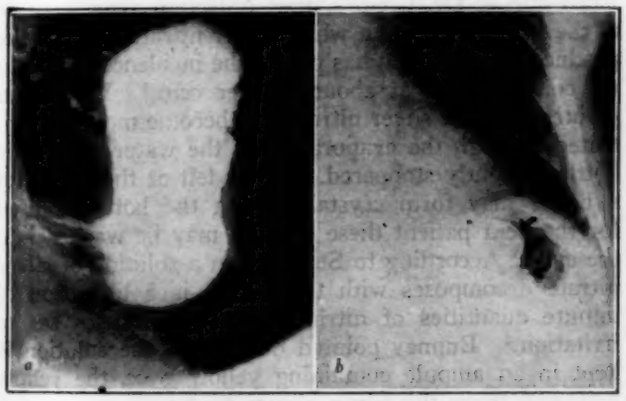


Fig. 1 (*a*).—Moderately extensive carcinoma at the cardia; (*b*), the thorax in the same case, immediately after roentgenoscopic examination of the stomach. The barium-coated, lobulated, malignant mass may be seen on the medial portion of the gas bubble of the cardia.

the esophagus with or without dilatation above this area, (2) abnormally retarded outflow of barium into the stomach (due to partial obstruction by the growth), (3) continuous outflow of barium instead of normal spurting (indicating involvement of the esophagogastric junction with loss of normal sphincter-like control) and (4) polypoid growths which project as rounded prominences and cause deviation of the path of the barium. Less frequently the column of barium splits as it hits the tumor.

After a small amount of barium has been given, pressure should be applied over the dependent portion of the stomach in order to force the barium up into the cardiac portion. In this way the mucosa is coated and further study of the internal relief pattern is possible.

Other shadows which are seen occasionally in the gas bubble and which must be differentiated are: 1. Apex of the heart (pulsates and disappears from bubble on deep inspiration): In a routine roentgenogram of the thorax the shadow of the heart seldom causes any diagnostic difficulty, because the roentgenogram is taken after the patient has inspired deeply. 2. Spleen (on greater curvature side): Malignant lesions of the

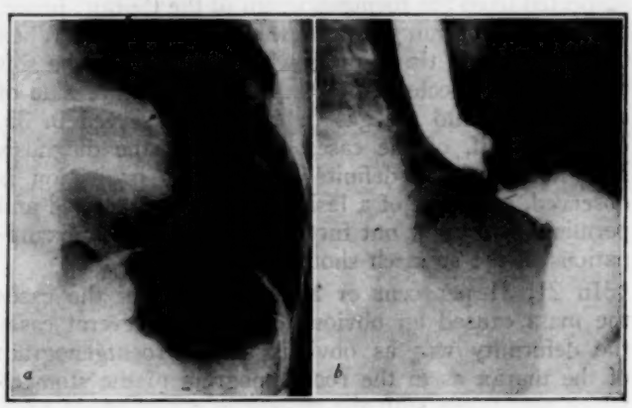


Fig. 2 (*a*).—Thorax with gas bubble of the cardia in which a lobulated mass can be seen on the medial aspect of the gas bubble; (*b*) esophagus and stomach in the same case, showing annular carcinoma of the lower part of the esophagus and the cardiac portion of the stomach.

cardia are most often on the side of the lesser curvature. 3. Glandular metastatic growths or other masses (uncommonly seen): All these shadows are smooth, sharp and regular in margin, and in the roentgenoscopic examination with barium the overlying rugae are seen to be normal.

Benign tumors in the cardia are infrequent. Therefore, when a tumor is present it is likely to be malignant. Other lesions which must be differentiated from carcinoma at the cardia are benign stricture and diverticulum of the lower part of the esophagus and cardiospasm. Extension of carcinoma of the esophagus into the cardiac end of the stomach produces a deformity similar to that produced by carcinoma which originates in the cardia and extends into the esophagus.

ROENTGENOGRAPHIC OBSERVATIONS

An ordinary roentgenogram of the thorax of the average-sized person generally includes the upper portion of the abdomen along with the thorax. This, then,

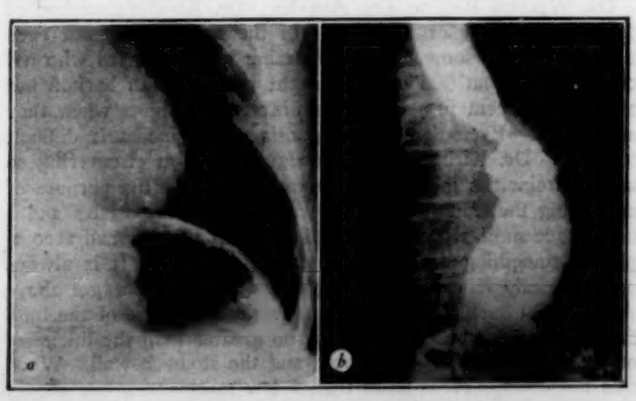


Fig. 3 (*a*).—Thorax: there is an irregular mass projecting from the medial wall of the cardia. The diagnosis of carcinoma was confirmed at operation; (*b*) same case showing the esophagus and stomach three weeks after a successful transthoracic, transdiaphragmatic resection of the lower part of the esophagus and the cardiac portion of the stomach.

includes the cardiac end of the stomach, and the gas bubble of the stomach is visible in the majority of cases. Therefore, if a mass is present it is visible within the gas bubble (fig. 1).

1. Stewart, W. H., and Illick, H. E.: Roentgen Diagnosis of Carcinoma at the Cardia, Am. J. Roentgenol. **32**: 43-51 (July) 1934.
2. Buckstein, J.: Clinical Roentgenology of the Alimentary Tract, Philadelphia, W. B. Saunders Company, 1940, p. 187.
3. Kirklin, B. R.: Roentgenologic Diagnosis of Cancer of the Cardia, Am. J. Roentgenol. **41**: 873-878 (June) 1939.

During 1945, 68 cases of tumor of the cardiac portion of the stomach with or without involvement of the esophagus were encountered at the Mayo Clinic. The lesion in each case was seen on roentgenoscopic examination. In some of these cases the diagnosis was suspected from the roentgenogram of the thorax; hence, this roentgenogram was reviewed in each case. When this was done a tissue mass which appeared to be soft and which projected from the lesser curvature side of the stomach into the gas bubble was observed in 35, or about half, of the cases. Although the diagnosis may not be made definitely when this projection is observed, existence of a lesion should be suspected and permission to carry out further roentgenoscopic examinations of the stomach should be requested.

In 21, 31 per cent or about a third, of the cases the mass caused an obvious defect. In several cases the deformity was as obvious in the roentgenogram of the thorax as in the roentgenogram of the stomach which was taken with the patient in a recumbent position (figs. 2 and 3). In some cases it was more obvious. In another 14 cases the defect was less obvious but was sufficiently apparent for the examiner to suspect the presence of a tumor and to request further study of the stomach. Lesions were seen more easily in roentgenograms in which the exposure was relatively heavy than in those in which it was light.

SUMMARY

The roentgenologic diagnosis of carcinoma of the cardiac end of the stomach is described. The importance of observing the air-filled upper segment is stressed because many diagnoses can be made or suspected without, or before, the use of radiopaque mediums. This segment can be observed on roentgenoscopic examination and also in routine roentgenograms of the thorax. A shadow which is caused by a tumor mass in the cardia and is seen in the gas bubble will sometimes be so clearly visible that the diagnosis can be made or at least suspected from this examination alone.

ABSTRACT OF DISCUSSION

Dr. Wilbur Bailey, Los Angeles: Dr. Kirklin's method of diagnosing cancer of the fundus of the stomach without even using barium is somewhat demoralizing to those of us who not only examine patients in the upright position with barium but then rotate them into numerous different positions when they are supine. Even then the diagnosis of carcinoma is difficult to make. Dr. Kirklin is to be congratulated on discovering so many carcinomas in films which were made for the purpose of examining the chest. On a few occasions my associates and I have made similar discoveries and have felt that we had accomplished something decidedly out of the ordinary. It is always well carefully to examine the left leaf of the diaphragm above the stomach bubble. The interval between the base of the lung and the stomach bubble should be no greater than the thickness of the left leaf of the diaphragm and the stomach wall. When this thickness exceeds more than a few millimeters, one should suspect infiltration of the stomach wall. Suggestions have been made that by way of economy 11 by 14 or 14 by 14 inch (28 by 36 or 36 by 36 cm.) size films should be used in thoracic examinations. Under these circumstances the left upper quadrant of the abdomen and the stomach bubble might be eliminated entirely—a fact which would make such film economy seem undesirable. Dr. Kirklin has done a beautiful piece of work, and I am sure we will all keep our eye on the left upper quadrant in roentgenograms of the chest from now on.

PROPHYLAXIS AGAINST OPHTHALMIA NEONATORUM

Clinical Comparison of Penicillin and Silver Nitrate: A Preliminary Report

H. CHARLES FRANKLIN, M.D.
Memphis, Tenn.

Sixty-seven years ago Credé, an obstetrician of Leipzig, Germany, first used silver nitrate in prophylaxis against ophthalmia neonatorum. With a small glass rod he instilled a single drop of 2 per cent silver nitrate into each eye of the newborn immediately after birth. Before the instillation, the eyes were cleansed with ordinary water and, afterward, were "cooled for twenty-four hours by means of a linen flap which had been saturated with salicylated water (2:100)."[1]

The silver nitrate drop method for prophylaxis became popular almost immediately and has remained so up to the present time. In Johnson's digest of the laws relating to ophthalmia neonatorum (1940), silver nitrate is mentioned most frequently as a preferred germicide.[2]

However, an element of opposition has existed. Even during Dr. Credé's time, objection arose because of the intense irritation which silver nitrate occasionally produced.[3] Hartman has placed the incidence of chemical conjunctivitis at about 4.3 per cent.[4] Von Hahn pointed out that silver nitrate will become more concentrated through the evaporation of the water unless the bottle is tightly stoppered. Drops left at the mouth of a bottle may form crystals; when the bottle is used for the next patient these crystals may be washed into the eye.[5] According to Stein, when a solution of silver nitrate decomposes with time there is a liberation of minute quantities of nitric acid, which causes severe irritation.[3] Bunney pointed out that if the solution is kept in an ampule containing yellow wax, the yellow wax will cause the silver nitrate to deteriorate to give an acid solution with a p_H of about 2.2 with a deposition of a black precipitate on the walls of the ampule.[6]

The solubility of silver nitrate is 75 per cent at a temperature of 86.1 F.[4] Thus there exists the danger of using a solution of a concentration higher than intended. Instances are recorded of infants being made blind by the use of a solution too high in concentration.[3]

The instillation of a 1 per cent solution of silver nitrate into the adult eye causes pain. I had a drop of fresh 1 per cent silver nitrate instilled into the conjunctival sac of one eye. An immediate painful discomfort was experienced, associated with lacrimation, conjunctival redness and the formation of a white curdlike exudate. I experienced some residual discomfort for four hours after this instillation.

Pharmacologically, silver nitrate is designated as a caustic, an astringent and a disinfectant. The dis-

From the Department of Obstetrics and Gynecology, the University of Tennessee College of Medicine.

Acknowledgment of their assistance is made to Laura N. Loeb, B.S., and Anna Dean Dulaney, Ph.D.; also to Miss F. V. Illing, R.N., and Mrs. B. L. Cawthon, R.N., of the Memphis and Shelby County Health Department.

1. Credé: Arch. f. Gynäk. **17**: 50, 1881.
2. Johnson, B.: Digest of Laws and Regulations Relating to the Prevention and Control of Syphilis and Gonorrhea in the Forty-Eight States and the District of Columbia, New York, American Social Hygiene Association, 1940.
3. Stein, I. F.: Ann. Ophth. **26**: 411, 1917.
4. Hartman, W. F.: Pennsylvania M. J. **43**: 639, 1940.
5. Von Hahn: Deutsche med. Wchnschr. **52**: 1174, 1926.
6. Bunney, W. E.: Am. J. Pub. Health **25**: 813, 1935.

infectant action of the compound is due to the free silver ion; its bactericidal property is a result of its combination with the protein of the micro-organism. Unfortunately, it also combines with proteins of the tissues; this explains its painful and destructive action.[7]

The most serious criticism of the use of silver nitrate is the doubtfulness of its value in the prevention of infectious acute conjunctivitis of the newborn. In 1935 Lehrfeld analyzed the records in 28,000 births occurring in six hospitals over a period of five years. He found the incidence of ophthalmia neonatorum to be 2.2 per cent.[8]

During the latter part of the nineteenth century, inflammation in the eyes of the newborn was thought to be of gonorrheal origin. Even as late as 1915 some still held to this opinion, for Van Blarcom wrote to stress that other causes were possible.[9] Thomas in 1928 called attention to the fact that Staphylococcus aureus can be the causative organism of acute purulent conjunctivitis of the newborn.[10] Among recent investigators extensive work has been done by Sorsby and associates in England in determining the causative organisms. In a series of 591 cases of ophthalmia neonatorum, published in 1942 and 1944,[11] the staphylococcus was most frequently the causative organism. The gonococcus was next in frequency, bacilli (diphtheroids predominant) third, and other cocci (gram-positive cocci, meningococci and pneumococci) fourth.

Today the term ophthalmia neonatorum is no longer synonymous with gonorrheal ophthalmia. It is now applied to all inflammations of the eye occurring within two weeks after birth. The time element of "within two weeks" is that usually found in the laws governing prophylaxis.[2]

Now, as before, the gonococcus is the organism which demands most attention for the prevention of blindness. But according to Thompson conjunctivitis caused by the pneumococcus, if once well established, can be equally destructive.[12] Ideal prophylaxis would be that which would destroy or inhibit the growth of these two organisms and as many other causative organisms as possible.

Since the discovery of penicillin, investigators have turned their attention toward its properties in relation to the eye. In 1929 Fleming used the human conjunctiva to test his newly discovered crude filtrate of penicillin for irritation. Irrigation every hour for a day produced no irritating effect.[13] Leopold and La Motte demonstrated that penicillin does not pass through the cornea into the aqueous humor of the rabbit's eye unless the cornea has been abraded or has become inflamed. They applied 4 drops of penicillin in isotonic solution of sodium chloride in a concentration of 500 Oxford units per cubic centimeter into the conjunctival sac. They also showed that corneal epithelium regenerates at approximately the same speed with hourly local applications of penicillin as when uninfluenced regeneration is allowed to take place.[14]

On the other hand, Struble and Bellows showed that when a concentration of 20,000 units of penicillin per cubic centimeter of isotonic solution of sodium chloride and an excess of solution is used penicillin does penetrate the cornea. They also stated that constant contact of penicillin in a concentration of 20,000 units per cubic centimeter of isotonic solution of sodium chloride with the cornea of a rabbit will produce no visible change after staining with fluorescein. A solution containing 10,000 units per cubic centimeter dropped into the conjunctival sac of the human eye will produce only slight smarting but no alteration in the corneal epithelium as revealed by examination with a slit lamp and fluorescein staining.[15]

Von Sallmann, also using rabbits' eyes, found that the intravitreal injection of 10 to 100 Oxford units of penicillin does not cause any damage to the retina, lens or optic nerve. Only negligible lesions were produced by the injection of 250 and 500 units.[16] According to Tooke, penicillin can be safely injected into the aqueous humor of the adult eye in concentrations of 4,000 to 6,000 units per cubic centimeter.[17] Ingalls flushed the anterior chamber of the eye with 20 cc. of a solution of penicillin (containing 3,300 units per cubic centimeter) after surgical treatment of penetrating wounds of the cornea, and satisfactory results were obtained.[18]

Patients with gonorrheal ophthalmia have been successfully treated with penicillin. Griffey reported the treatment of a patient with gonorrheal conjunctivitis by the use of penicillin given intramuscularly.[19] McCullough reported a case of sulfathiazole-resistant gonococcic conjunctivitis in an adult which yielded to a combination of topical (1,000 units per cubic centimeter) and parenteral administrations of penicillin.[20] Seelig treated a patient by subconjunctival injections and local instillations (500 units per cubic centimeter).[21] Lewis reported the use of penicillin, local (1,000 and 2,500 units per cubic centimeter) and systemic administrations combined, in the treatment of 30 patients with results better than those obtained with the use of sulfonamide compounds.[22]

Bland and Wilson in Egypt were disappointed by the use of drops of calcium penicillin (500 Oxford units per cubic centimeter) locally in the treatment of 11 patients with gonorrheal ophthalmia. Eight of these were cured in an average of six days, but sulfonamide drugs were resorted to in 3 patients.[23]

Vorisek and Evans reported a drug-sensitization reaction following a second course of penicillin drops (500 and 250 units per cubic centimeter) in the local treatment of a patient with severe gonorrheal ophthalmia. The reaction was characterized by ptosis of the upper eyelid, by thick, red, leathery eyelids and by a slight fissuring of the epithelium of the cutaneous surface.[24]

7. Cushny, A. R.: A Textbook of Pharmacology and Therapeutics, ed. 11, Philadelphia, Lea & Febiger, 1936, p. 147.
8. Lehrfeld, L.: Limitations of Use of Silver Nitrate in Prevention of Ophthalmia Neonatorum, J. A. M. A. **104**: 1468 (April 27) 1935.
9. Van Blarcom, C. C.: Am. J. Pub. Health **6**: 926, 1916.
10. Thomas, A. B.: J. Infect. Dis. **43**: 306, 1928.
11. Sorsby, A.; Hoffa, E. L., and Smellie, E. W.: Brit. M. J. **1**: 323, 1942. Sorsby, A.; Hoffa, E. L., and Young, E. N., ibid. **1**: 353, 1944.
12. Thompson, J. H.: J. Missouri M. A. **14**: 7, 1917.
13. Fleming, A.: Brit. J. Exper. Path. **10**: 226, 1929.
14. Leopold, I. H., and LaMotte, W. O., Jr.: Penetration of Penicillin in Rabbit Eyes with Normal, Inflamed and Abraded Corneas, Arch. Ophth. **33**: 43 (Jan.) 1945.
15. Struble, G. C., and Bellows, J. G.: Studies on Distribution of Penicillin in Eye and Its Clinical Application, J. A. M. A. **125**: 685 (July 8) 1944.
16. von Sallmann, L.: Penicillin Therapy of Infections of Vitreous, Arch. Ophth. **33**: 455 (June) 1945.
17. Tooke, F. T., and others: Canad. M. A. J. **53**: 373, 1945.
18. Ingalls, R. G.: Am. J. Ophth. **29**: 1152, 1946.
19. Griffey, W. P.: Penicillin in Treatment of Gonorrheal Conjunctivitis, Arch. Ophth. **31**: 162 (Feb.) 1944.
20. McCullough, R. J. P., and Dyson, C.: Canad. M. A. J. **52**: 284, 1945.
21. Seelig, C. A.: U. S. Nav. M. Bull. **44**: 389, 1945.
22. Lewis, P. M.: Am. J. Ophth. **29**: 694, 1945.
23. Bland, J. O. W., and Wilson, R. P.: Brit. J. Ophth. **29**: 339, 1945.
24. Vorisek, E. A., and Evans, A. L.: Am. J. Ophth. **28**: 520, 1945.

Sorsby and Hoffa in 1945 reported the treatment of ophthalmia neonatorum in 47 infants with only the local application of penicillin in the form of drops. Concentrations of 500, 1,000, 1,500 and 2,500 Oxford units per cubic centimeter were used, and the results became more satisfactory as the concentration of penicillin in the drops increased. Twenty-two infants were treated with a concentration of 2,500 Oxford units; there were 21 cures. The causative organism of the therapeutic failure was a diphtheroid. Included in this group of 22 infants were 5 with gonorrheal ophthalmia. Thirteen of the 22 were cured clinically within forty-eight hours, and the remaining 8 within one hundred hours. These authors stated that the drug is well tolerated by the infants' eyes; occasionally a mild transitory flushing of the conjunctivas may be observed.[25]

Sorsby later supplemented the previously reported cases with an additional 38 cases. The results in this series were equally satisfactory except for 2 failures. The causative organisms of these failures were the gonococcus in one and a diphtheroid in the other. The same concentration of penicillin was used as before, but more frequent instillations were made.[26]

These reports indicate that penicillin in therapeutic concentrations is noninjurious to the vital structures of the human eye. They show that penicillin is an effective therapeutic agent in the treatment of gonorrheal ophthalmia. The significant work of Sorsby and Hoffa demonstrates that penicillin in adequate concentration appears to be effective in the treatment of ophthalmia neonatorum when applied locally.

PROPHYLACTIC INSTILLATION OF PENICILLIN

The foregoing facts suggest that penicillin may be an effective prophylactic agent against ophthalmia neonatorum when used in drops and in several respects may be superior to silver nitrate. Penicillin in proper concentration is nonirritating, nonpainful, nondestructive and effective in the treatment of ophthalmia neonatorum.

On the other hand, silver nitrate is temporarily destructive to the conjunctiva, as was first demonstrated by Credé and Hörder.[3] This destruction is observed clinically as a chemical conjunctivitis. That it is painful has been stressed. Silver nitrate deteriorates with time and with exposure to improper containers. But the most important consideration is the danger of permanent injury to the eyes as a result of the accidental use of a too concentrated solution of the silver nitrate.

The present study was undertaken to evaluate clinically the use of penicillin in the form of drops for prophylaxis against ophthalmia neonatorum and to compare it with silver nitrate as commonly used for this purpose.

METHOD

For a four month period (beginning July 1, 1946) penicillin was used for prophylaxis in the eyes of each newborn infant delivered at the John Gaston Hospital, Memphis, Tenn. For comparison silver nitrate was used for a three month period.

The infants were followed in the hospital for evidence of ocular abnormalities and, through the cooperation of the Memphis and Shelby County Health Department, were followed in the home for the first two weeks of life. The eyes of the infants were examined by public health nurses between the fourteenth and seventeenth days of life.

Aerobic, anaerobic and carbon dioxide cultures were run on specimens obtained from the conjunctivas of infants exhibiting pus in their eyes.[27]

SOLUTIONS

Penicillin was used in the form of the crystalline sodium salt of penicillin. A concentration of 2,500 units per cubic centimeter of diluent was used throughout. Sterile isotonic solution of sodium chloride was used as a diluent throughout, except for one and one-half months when sterile distilled water was used. A fresh solution was made as needed but was not kept longer than a week. It was kept refrigerated below 59 F. (15 C.) when not in use.

Silver nitrate was used as a 1 per cent solution in distilled water. A fresh solution was made each day and dispensed from the drug room in a new dropper bottle.

PROCEDURE

Prophylaxis of the eyes of each newborn infant was carried out in the delivery room within one hour of birth, before the infant went to the nursery. The eyelids and adjacent area of the newborn infant were cleansed of contaminating secretions by gently wiping with a large ball of cotton from the inner canthus outward. The eye was closed at the time. Gauze was then used on the fingers for traction to open the eyelids while each eye was flushed thoroughly with 2 or 3 cc. of sterile isotonic solution of sodium chloride (or sterile distilled water when it was the diluent for the penicillin). One drop of penicillin solution was then instilled into the conjunctival sac of each eye.

Instillations were also carried out in the nursery. A single drop of penicillin was instilled daily in each eye of each infant for the first three days of life. The first midnight following the day of birth was considered the beginning of the first day of life. Instillations were made throughout the nursery at approximately the same time each day. Gauze was used on the fingers for traction to open the eyelids of each eye while 1 drop of penicillin was instilled. The hands were washed with soap and water before handling each infant.

PROPHYLACTIC INSTILLATION OF SILVER NITRATE

When silver nitrate was used ocular prophylaxis was carried out in the delivery room in the manner previously described, except that one drop of silver nitrate was instilled instead of penicillin and sterile distilled water was used for flushing the eyes. The infants did not receive any prophylaxis in the nursery.

RESULTS

A total of 1,710 infants (961 infants after the use of penicillin and 749 infants after the use of silver nitrate) were studied in the nursery. All neonatal deaths occurring among infants born in either period were excluded. Twenty (2.1 per cent) of 961 infants exhibited pus in one or both eyes during or after penicillin prophylaxis; 45 (6.0 per cent) of 749 exhibited pus after silver nitrate (table 1).

Approximately half of the 20 infants exhibiting pus after penicillin drops showed grouping of occurrence around the first and second days of life. The occur-

25. Sorsby, A., and Hoffa, E.: Brit. M. J. 1:114, 1945.
26. Sorsby, A.: Brit. M. J. 1:903, 1945.

27. A bacteriologic analysis will be treated separately in another article.

rence in the other half was sporadic (chart 1). The occurrence of pus in the eyes of 45 infants after the use of silver nitrate showed definite grouping on the day of birth and the first day of life.

Abnormalities other than the presence of pus were noted in each group. Two hundred infants were followed from each group to evaluate the incidence of eyelid swelling, conjunctival redness and watery discharge. The degree of abnormality—slight, moderate or severe—was graded. Abnormalities occurred most frequently on the day of birth. Swelling of the eyelids was noted in 31 per cent of infants after penicillin prophylaxis and in 58 per cent after silver nitrate. Conjunctival redness was seen in 42 per cent after penicillin and in 72 per cent after silver nitrate. Watery discharge was least frequent and occurred in 2 per cent after penicillin and in 10 per cent after silver nitrate. Moderate and pronounced degrees only of these abnormalities are recorded in the foregoing analysis, while slight degrees are not. A slight degree of conjunctival redness or swelling of the eyelids can be produced by the infant's crying. Likewise a moderate degree can be converted to a severe one by crying; thus moderate and appreciable degrees are grouped together.

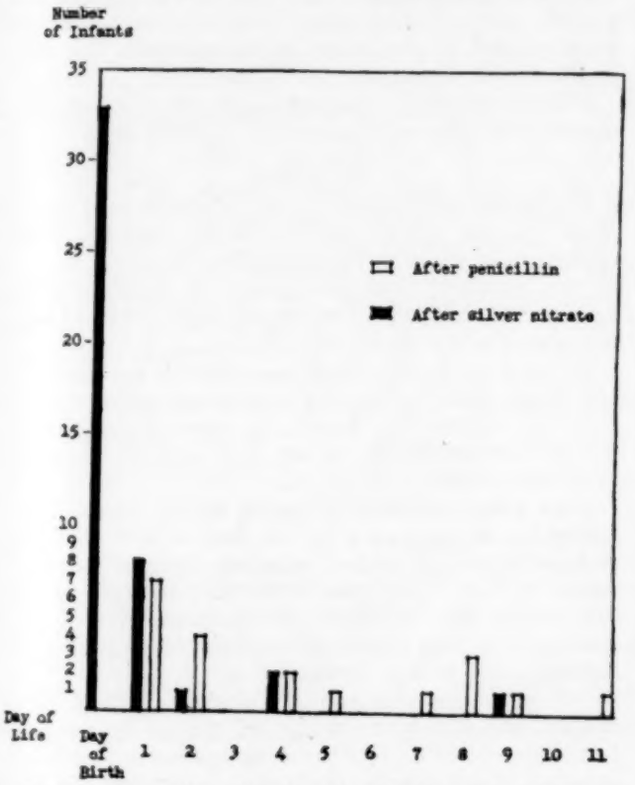


Chart 1.—Day of life when pus was first observed in infant's eyes while in nursery.

TABLE 1.—*Incidence of Infants Exhibiting Pus in Eyes While in Nursery After Each Method of Prophylaxis*

Method of Prophylaxis	Infants Exhibiting Pus	Total No. of Infants	%
Penicillin	20	961	2.1
Silver nitrate	45	749	6.0

A comparison between the incidence of swelling of the eyelids in relation to the day of life after each type of prophylaxis is made in chart 2. The occurrence of conjunctival redness is compared in chart 3.

The preceding comparison was made when sterile isotonic solution of sodium chloride was used as the diluent for dissolving the penicillin crystals and for irrigation of the eyes in the delivery room. During the time that distilled water was used for both purposes the eyes were not graded in the manner previously described, but no noticeable difference was observed clinically between its use and the use of saline solution. Since the latter causes less discomfort than does distilled water in the adult eye, it is probably to be preferred.

Gonococcic conjunctivitis did not develop in any infant in the group receiving penicillin prophylaxis, but in 1 premature infant in the silver nitrate group it did develop on the fourth day of life. The organism was identified by culture and confirmed by fermentation tests.

TABLE 2.—*Nurses' Reports from Study of Infants at Home During First Two Weeks of Life*

Condition of Eyes	Penicillin		Silver Nitrate	
	No.	%	No.	%
Normal	672	93.7	479	96.0
Presence of pus	22	3.1	12	2.4
Other abnormalities (redness, swelling or watery discharge)	11	1.5	6	1.2
History of infection of the eyes related by mother	12	1.7	2	0.4
	717	100.0	499	100.0

FOLLOW-UP OBSERVATIONS

Nine hundred and sixty-one infants who received penicillin prophylaxis were discharged to their homes.

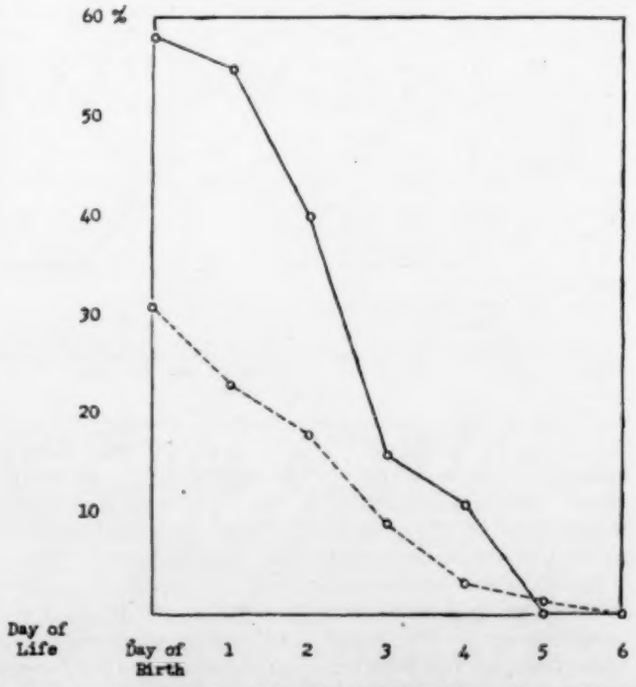


Chart 2.—Incidence of swelling of the eyelids after each method of prophylaxis: broken line, after penicillin; unbroken line, after silver nitrate.

The public health nurses made follow-up examinations on a total of 771 infants (80.2 per cent). Of these the follow-up of 54 infants could not be completed because they either were not residents of Shelby County or had remained in the hospital through the seventeenth day;

or because of some other reason. Thus, a complete follow-up was made on a total of 717 infants (74.6 per cent).

Seven hundred and forty-nine infants who received silver nitrate prophylaxis were discharged to their homes, and a follow-up was made on a total of 558 infants (74.5 per cent). Of these the follow-up of 59 infants could not be completed for the reasons already mentioned, and thus a complete follow-up was made on a total of 499 infants (66.6 per cent).

After the use of penicillin for prophylaxis 672 infants (93.7 per cent) were normal at the time (fourteenth to seventeenth day) of the public health nurses' examinations (table 2). The mothers of this group stated that no abnormalities of the eyes had been seen after the infant had arrived at home. Pus was found in the eyes of 22 (3.1 per cent) at the time of the examinations. Other abnormalities—conjunctival redness,

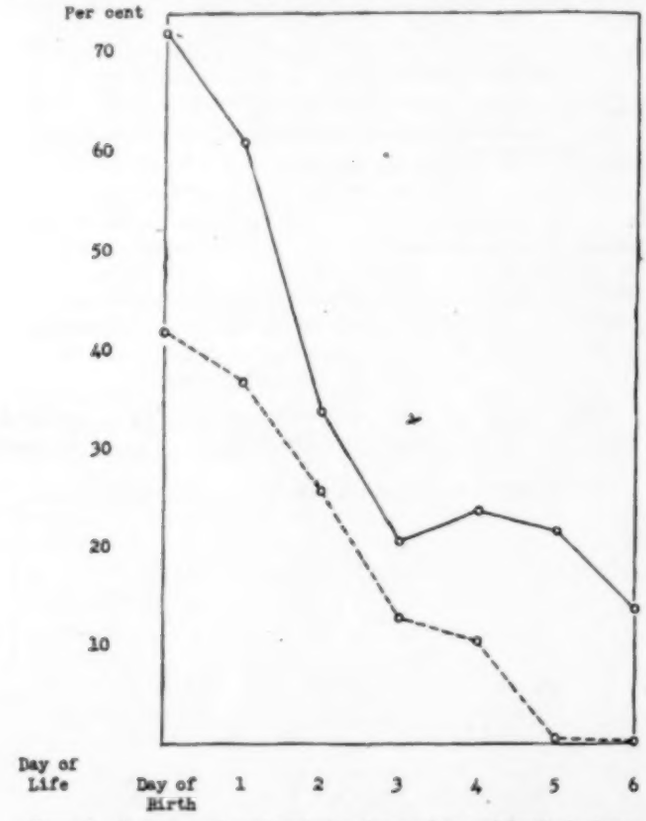


Chart 3.—Incidence of conjunctival redness after each method of prophylaxis: broken line, after penicillin; unbroken line, after silver nitrate.

swelling of the eyelids or a watery discharge—were noted in 11 infants (1.5 per cent) by the visiting nurses. The mothers of 12 infants (1.7 per cent) stated that abnormalities of the eyes occurred prior to the time of examination. These abnormalities had cleared by the fourteenth to seventeenth days.

After silver nitrate was used for prophylaxis 479 infants (96 per cent) were normal at the time of the examination in the home. Of those who exhibited abnormalities, pus was found in the eyes of 12 (2.4 per cent), and other abnormalities were noted in 6 (1.2 per cent). The mothers of 2 infants (0.4 per cent) stated that abnormalities of the eyes had occurred prior to the time of the examination but had cleared by the fourteenth to seventeenth days.

After penicillin prophylaxis, 4 of those who exhibited ocular abnormalities in the home were hospitalized. In 1 there developed an ocular infection on the fifth day of life (hospitalized five days), in 1 on the sixth day (hospitalized four days), in 1 on the eighth day (hospitalized three days) and in 1 on the fourteenth day (hospitalized seven days).

After silver nitrate prophylaxis 2 infants were admitted to the hospital. In 1 infant infection of the eyes developed on the tenth day of life (hospitalized sixteen days—concomitant infection of thrush of mouth), and in the other on the eleventh day (hospitalized four days).

The bacteriologic observations in all 6 infants were negative for the gonococcus.

COMMENT

Crystalline sodium salt of penicillin was used because of its stability. This form of penicillin does not require refrigeration while in the crystalline form. A solution of this form of penicillin retains its potency for at least one week if kept refrigerated below 59 F. (15 C.), provided that the p_H is over 5.5.[28]

In view of the fact that penicillin is not antiseptic but largely bacteriostatic, it was thought that multiple instillations probably would be necessary. Thus, it was decided arbitrarily to use four instillations, as has been mentioned.

That silver nitrate is irritating to the extent of pus formation is confirmed by the fact that a high percentage of infants in the group receiving silver nitrate prophylaxis exhibited pus on the day of birth and the first day of life. Likewise a high percentage of those infants exhibiting other abnormalities at this time was probably due to this irritation.

The cause of conjunctival redness, swelling of the eyelids and watery discharge in the group receiving penicillin was not determined in this study. Since the infant received penicillin prophylaxis through the third day of life, these abnormalities occurred prior to the completion of the prophylaxis. The abnormalities usually subsided before the prophylaxis was completed. Thus, it did not seem likely that possible hypersensitiveness to penicillin was the cause. None of the infants observed presented signs attributable to a drug-sensitization reaction such as those described by Vorisek and Evans.[24]

The actual cause of these ocular abnormalities is open to speculation. Any one of several factors, or a combination of them, might be responsible. Other than a nonsuppurative ocular infection, these factors might be trauma to the eyes by pressure during labor or delivery, irritation from the lubricant used during delivery or exposure to the atmosphere of an eye accustomed to being bathed in amniotic fluid.

It must be remembered that ocular prophylaxis after birth can be expected to protect an infant only from the contaminating secretions of the mother's birth canal. An infant's eyes may become infected by any one who handles the infant, both in the nursery and at home. In carrying out prophylaxis of the eyes cleanliness by washing the hands before handling each infant must be observed to avoid this source of infection and, more important, to avoid the spread of ocular infection from one infant to another. The use of gauze for traction of the eyelids serves a second purpose of preventing the fingers from coming directly in contact with the skin of the eyelids.

The incidence of infection of the eyes may be influenced by the coexistence of another type of infection

28. Personal communication from pharmaceutical firm.

in the nursery. During the period of penicillin trial there were two outbreaks of infectious diarrhea in the nursery. This was under control during the period of the silver nitrate trial.

A disadvantage of the method of penicillin prophylaxis as compared to that with silver nitrate is the probable need of four instillations instead of one. However, this disadvantage is outweighed by a number of advantages. The advantage of safety and of penicillin's painless instillation have been mentioned. All types of abnormalities of the eyes are less frequent during the first days of life when penicillin rather than silver nitrate is employed for prophylaxis. A solution of silver nitrate must be freshly made each day, but that of penicillin need not be made oftener than once a week. One need not fear that noxious substances will be produced by the deterioration of penicillin as they are by that of silver nitrate. If one suspects serious conjunctival contamination, it is convenient to be employing a prophylactic agent which can be used frequently and in any amount desired. The solution of penicillin may be used not only for prophylaxis but for treatment as well.

SUMMARY AND CONCLUSIONS

Penicillin and silver nitrate are compared in prophylaxis against ophthalmia neonatorum. A total of 1,710 infants were studied clinically in the nursery and in the home during the first two weeks of life. The incidence of the occurrence of pus in the eyes after each method of prophylaxis was determined. A comparison was made of the day of life on which the pus was first observed. The incidence of other abnormalities of the eyes was evaluated. The incidence of gonococcic conjunctivitis was determined. The number of infants hospitalized because of ocular infections that developed during the first two weeks of life was noted.

In the nursery, the occurrence of pus was approximately one third as frequent in the penicillin group as in the silver nitrate group. The occurrence of pus in relation to the day of life was sporadic in approximately half the infants in the penicillin group but showed grouping around the day of birth and first day of life in the silver nitrate group. Other abnormalities—conjunctival redness, swelling of the eyelids and watery discharge—were much less frequent in the penicillin group. In no infant in the penicillin group did gonococcic conjunctivitis develop, but 1 infant in the silver nitrate group did show gonococcic conjunctivitis on the fourth day of life.

While at home a higher percentage of those in the penicillin group exhibited pus and other abnormalities of the eye than of those in the silver nitrate group. Four from the penicillin group and 2 from the silver nitrate group were hospitalized. There were no cases of gonococcic conjunctivitis in either group during the first two weeks at home.

In the study of this series of infants penicillin compares favorably with silver nitrate as a prophylactic agent. Penicillin prophylaxis is to be preferred because danger of permanent injury to the eye is eliminated; an instillation is nonpainful; ocular abnormalities are less frequent during the first days of life; the solution of penicillin need not be made fresh each day; deterioration does not produce noxious substances; an excess of the solution may be used if desired, and the penicillin solution may be used for both prophylaxis and treatment.

Clinical Notes, Suggestions and New Instruments

THE USE OF NEOSTIGMINE METHYLSULFATE IN INFECTIOUS NEURONITIS

Report of a Case with Involvement of Respiratory Muscles

RUSSELL J. BLATTNER, M.D.
JAMES GOODFRIEND, M.D.
and
BAILEY D. WEBB, M.D.
St. Louis

The use of neostigmine has been advocated in the treatment of poliomyelitis[1] and other neuromuscular disturbances.[2] Whereas clinical results with this and similar drugs are equivocal in poliomyelitis,[3] encouraging results have been reported in the treatment of a case of neuronitis.[4] The present report concerns a case of infectious neuronitis in which neostigmine effected subjective and objective improvement during a critical period of respiratory difficulty.

REPORT OF CASE

C. V., a white boy aged 10, was admitted to St. Louis Children's Hospital on June 8, 1946. He had been well until two weeks prior to admission when he suffered an illness characterized by fever, malaise, lesions in the mouth and a maculopapular rash which began on the face. The disease was diagnosed as measles by the family physician. Measles was prevalent in the community at the time. Apparently the boy's recovery from this acute illness was complete. However, nine days after its onset, i. e., five days prior to admission, he began to complain of headache and of weakness in the legs. After about forty-eight hours the headache subsided, but nausea and vomiting followed. At this time weakness in both legs was associated with pain in the hamstrings, and there was stiffness of the back and the neck. He was observed to walk with a staggering gait. On the night before admission to the hospital he experienced difficulty in initiating urination. The remainder of the history was noncontributory. The child had been immunized against smallpox, diphtheria and tetanus.

On admission, physical examination revealed a well developed and well nourished boy. Slight ptosis of the eyelids was noted; otherwise the cranial nerves were intact. There was slight stiffness of the neck, and pain was elicited on flexion, but no definite rigidity was demonstrated. All deep reflexes in the lower extremities were absent, as was the right upper abdominal reflex. Reflexes in the upper extremities were equal and active. No response was obtained through plantar stimulation. No impairment of sensation was detected on careful examination. The finger to nose test was well performed with the eyes open

From the Department of Pediatrics, Washington University School of Medicine, and the St. Louis Children's Hospital.

1. (*a*) Boines, G. J.: The Use of Prostigmine and a Modified Kenny Technique in the Treatment of Poliomyelitis, J. Pediat. **25:** 414-438 (Nov.) 1944. (*b*) Brainerd, H.; Katz, H. J.; Rowe, A. P., Jr., and Geiger, J. C.: The Clinical Manifestations of Poliomyelitis: Treatment with Neostigmine and Kenny Method, J. A. M. A. **128:** 718-719 (July 7) 1945. (*c*) Kabat, H., and Knapp, M. E.: The Use of Prostigmine in the Treatment of Poliomyelitis, ibid. **122:** 989-995 (Aug. 7) 1943; The Mechanism of Muscle Spasm in Poliomyelitis, J. Pediat. **24:** 123-137 (Feb.) 1944.

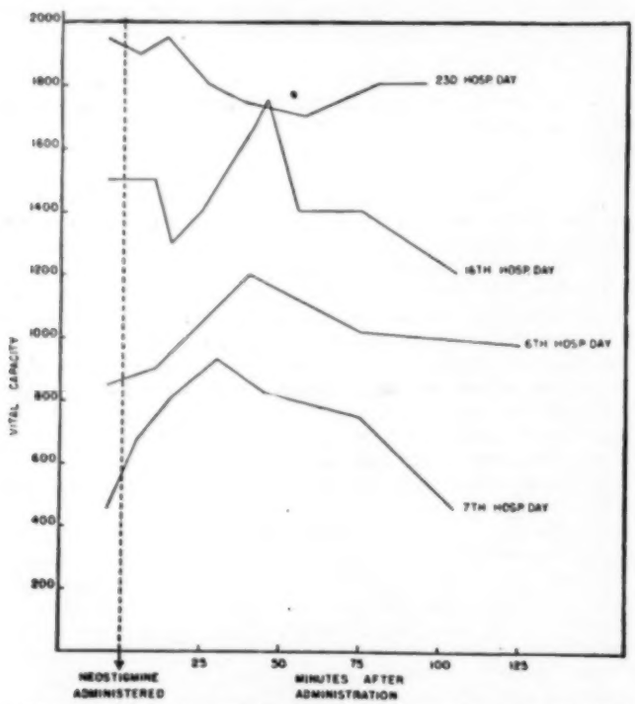
2. (*a*) Kabat, H.: Studies on Neuromuscular Dysfunction: Neostigmine Therapy of Neuromuscular Dysfunction Resulting from Trauma; Neostigmine Therapy of Hemiplegia, Facial Paralysis and Cerebral Palsy; Neostigmine Therapy of Chronic Rheumatoid Arthritis and Subacromial Bursitis, Pub. Health Rep. **59:** 1635-1650 (Dec. 22) 1944. (*b*) Kremer, M.: Action of Intrathecally Injected Prostigmine, Acetylcholine and Eserine on the Central Nervous System in Man, Quart. J. Exper. Physiol. **31:** 337-357 (July) 1942. (*c*) Trommer, P. R., and Cohen, A.: Use of Neostigmine in Treatment of Muscle Spasm in Rheumatoid Arthritis and Associated Conditions, J. A. M. A. **124:** 1237-1239 (April 29) 1944. (*d*) Ward, A. A., Jr., and Kennard, M. A.: Effect of Cholinergic Drugs on Recovery of Function Following Lesions of the Central Nervous System in Monkeys, Yale J. Biol. & Med. **15:** 189-228 (Dec.) 1942. (*e*) Wolf, A.: A Method for Shortening the Duration of Lower Motor Neurone Paralysis by Cholinergic Facilitation, J. Nerv. & Ment. Dis. **92:** 614-622 (Nov.) 1940.

3. (*a*) Fox, M. J., and Spankus, W. H.: The Value of Neostigmine in Acute Anterior Poliomyelitis, J. A. M. A. **128:** 720-722 (July 7) 1945. (*b*) Watkins, A. L., and Brazier, M. A. B.: Observations on Muscle Spasm in Poliomyelitis: Electromyographic Studies on the Effect of Various Forms of Thermal Therapy and of Prostigmine, Arch. Phys. Med. **26:** 325-328 (June) 1945; correction, ibid. **26:** 775 (Dec.) 1945.

4. Shaffer, J. O.: The Use of Neostigmine in the Treatment of the Guillain-Barré Syndrome, J. A. M. A. **131:** 285-286 (May 25) 1946.

but only fairly well performed with the eyes closed. The heel to knee test was poorly performed bilaterally. Muscle tone was extremely poor in the hamstrings, the gastrocnemius and the soleus muscles of both extremities. On forced extension of the hamstrings, the patient complained of pain in the tendons. The muscles of the back were quite stiff, and the patient was not able to walk without support. Cerebrospinal fluid obtained on admission showed 1 cell per cubic millimeter, and the Pandy test was positive; the chloride content was 730 mg. and the protein level was 110 mg., per hundred cubic centimeters. Urinalysis revealed nothing abnormal. Study of the blood showed 14.5 Gm. hemoglobin, 10,000 white cells, with 67 segmented, 30 lymphocytes, 2 monocytes and 1 eosinophil, and adequate platelets. A diagnosis of infectious polyneuritis (neuronitis) was made.

The patient's condition was satisfactory until the fourth hospital day, at which time striking changes in the neurologic picture were observed. Cranial nerve examination now revealed the following: a slight blurring of vision but no decided impairment of extraocular movements; weakness and pain in masseter muscles; moderate facial weakness more pronounced on the right side; an increase in ptosis; palatal weakness and impairment in swallowing; partial paralysis of vocal cords; weakness of the sternocleidomastoids, and slow protrusion of the tongue with a fine tremor. Biceps jerks had become much less vigorous than on admission; the abdominal reflexes were difficult to elicit, and the reflexes in the lower extremities remained absent. The patient complained of paresthesia in the lower extremities and to some degree in the upper extremities. Vibratory sense (256) was absent in the lower but present in the upper extremities, and position sense was lost in the lower extremities. The flaccid paralysis which had been noted on admission was more pronounced. The patient was just able to raise his arms and legs from the bed. Weakness in the muscles of respiration was noted.



Effect of neostigmine methylsulfate on vital capacity. (The calculated normal vital capacity is 1,900 cc.)

Because of the rapid development of these adverse findings, a trial dose of neostigmine was deemed advisable, and 1 cc. of a 1:2,000 dilution of neostigmine methylsulfate was administered subcutaneously. Within forty minutes after the administration of the drug a definite change in the patient's condition was noted. He was able to raise both arms from the bed and to extend them. His speech and deglutition were strikingly improved. Although his legs were still weak, he could flex the knees and dorsiflex both feet. In view of this improvement, the administration of neostigmine was continued at regular three hour intervals. Within forty to forty-five minutes after each administration of drug, well defined improvement in voice and respiration was noted.

In order to obtain objective evidence and evaluate the apparent improvement in respiratory efficiency subsequent to the use of neostigmine, studies of the vital capacity were undertaken on the sixth hospital day. By means of a cylindrical spirometer, the vital capacity at rest was recorded as 850 cc. Immediately after this reading was made, 1 cc. of a 1:2,000 solution of neostigmine methylsulfate was administered subcutaneously, and at regular intervals thereafter determinations of the vital capacity were made. (See the accompanying chart.) A maximum increase was observed forty minutes after the administration of the drug, when the vital capacity was 1,200 cc. Within seventy-five minutes after giving the drug, it had fallen to 1,020 cc., and within 125 minutes it had returned to 975 cc. The patient was able to breathe more comfortably during the period of increased vital capacity, and the mild cyanosis tended to disappear. Also, as noted previously, muscular function was improved. Extension of the arms, which before the administration of the drug could be executed only after several jerking movements, was now accomplished smoothly. Appreciable relief from the painful spasm of the shoulder girdle and back lasted for a period of one-half hour to one hour.

Despite therapy, however, the patient became progressively worse during the next twenty-four hours. The effectiveness of neostigmine for relief of muscular spasm and for increase in vital capacity was reduced decidedly. Now the administration of neostigmine increased the vital capacity from a resting level of 450 cc. to a maximum of 930 cc. thirty minutes after the administration of the drug. The return to resting level occurred within an hour and forty-five minutes. At this time (seventh hospital day) studies made of the power of finger muscles likewise indicated maximum effect of the drug at thirty minutes. Thirty minutes after the drug was administered the work capacity of the right index finger against constant weight was doubled.

In the hope of obtaining some information as to the site of action of neostigmine, action currents from a flexor of the forearm in response to electrical shocks to the ulnar nerve were recorded before and after the usual dose of neostigmine on the eighth hospital day. With supramaximal shocks the amplitude of the potential was not increased by the drug. While this does not demonstrate that normal power of the muscle was present in either case, it does indicate that any improvement in power under this drug was not due to an effect on the nerve-muscle junction and was presumably, therefore, an action of the central nervous system. Records of the flexors and extensors of the wrist in voluntary movement seemed to indicate that the tendency of flexors to respond during extension, and of extensors during flexion, was decreased under neostigmine. Such a finding is, however, not conclusive since opposing muscles may be involved normally in controlling the movement of the wrist. In addition relaxation of emotional tension as the subject became accustomed to an unusual procedure may have contributed to the result.[5]

On the ninth hospital day the patient's respiratory distress was more pronounced, due in part to the aspiration of a small quantity of water. Resort to the Drinker respirator was necessary. In view of the information gained from the studies of vital capacity and the obvious relief of spasticity and muscular pain, the administration of neostigmine was continued at maximum dosage of 1 cc. of a 1:2,000 dilution given subcutaneously every two hours, even during the period when the patient was in the respirator. At this time the patient complained of some abdominal pain, but there was no increase in salivation. Atropine (1/150 grain, 0.4 mg.) was given once to counteract abdominal pain.

During the next four days, which were spent in the respirator, weakness of the muscles was extreme. However, at the end of this time the patient began to improve in all respects. On the thirteenth hospital day it was possible for him to remain out of the respirator all day. The administration of neostigmine was necessary only every three hours. Phonation had improved greatly; swallowing was accomplished with less difficulty; ptosis

5. Electromyography was done by Dr. George H. Bishop in the Department of Neurophysiology, Washington University School of Medicine.

and facial paresis were less definite. All deep reflexes in both upper and lower extremities were still absent except for the left biceps jerk which was present inconstantly. Superficial reflexes were absent. The position sense in the lower extremities was impaired, and the patient complained of paresthesia in all extremities. The remainder of the sensory examination revealed normal conditions. After the thirteenth hospital day steady progress toward recovery was made. On the sixteenth hospital day further studies on vital capacity were attempted. The resting vital capacity at this time was recorded as 1,500 cc. A maximum rise to 1,750 cc. was observed fifty-five minutes after the administration of neostigmine. In view of this minimal response, the administration of the drug was discontinued on the seventeenth hospital day. At this time the electrical tests on the muscles which had been used on the previous occasion were repeated

Effect of Neostigmine Methylsulfate on Normal Controls

Subject	Vital Capacity (in Cc.)		Vital Capacity (in Cc.), Min. After Neostigmine						
	Calculated	Actual	5	15	30	40	60	80	100
J. F.	2,400	2,800	2,800	2,750	2,700	2,700	2,720	2,750	2,650
A. B.	2,400	2,600	2,350	2,400	2,300	2,250	2,400	2,600	2,400
D. C.	2,100	1,800	1,850	1,750	1,800	1,800	1,800	1,720	1,750

and the findings compared with those obtained for corresponding muscles of a normal child. In neither case was any effect of neostigmine noted—either on the response to electrical stimulation of the muscles or on voluntary motion to any significant degree.

Muscular strength and reflexes returned gradually. On the eighteenth hospital day spinal puncture revealed clear fluid that contained 1 lymphocyte per cubic millimeter and had a protein level of 415 mg. per hundred cubic centimeters. On the twenty-second day a trial dose of neostigmine methylsulfate was administered in an attempt to determine its effect on the tremor of the hands and on a mild spasm of the sacrospinalis muscle which were still present. No effect on either was noted. Repeated vital capicity readings on the twenty-third hospital day gave an average resting level of 1,950 cc. The vital capacity did not change within two hours after the administration of 1 cc. of a 1:2,000 dilution of neostigmine. Improvement continued, and the patient was discharged on the twenty-ninth hospital day. Follow-up examinations indicated gradual, steady return of muscle power, so that at thirty days after discharge all deep reflexes were present. No involvement of the cranial nerves was observed. Except for slight difficulty on running, the gait was normal. Two months after discharge no abnormalities whatsoever could be elicited.

COMMENT

The administration of neostigmine methylsulfate to a patient during the acute phase of infectious neuronitis resulted in remarkable subjective and objective improvement. Within thirty to forty-five minutes after the subcutaneous administration of the drug there was notable change in phonation and deglutition, relief from pain due to muscular spasm, greater ease of movement of the upper and lower extremities and an increase in vital capacity. In the acute phase of the disease, the response to neostigmine was progressively less both with respect to duration and to overall effect. In the latter part of the period of recovery, no effect due to neostigmine could be demonstrated.

The apparent improvement in the strength of the muscles might be interpreted as due to a decrease in spasticity of the antagonists rather than to an increase in the strength of the agonists. It is suggested that a reduction in hyperactivity had occurred at cord or higher levels due perhaps to an effect of neostigmine on the central nervous system. Kabat and Knapp [1c] who have made similar observations in subjects whose muscular spasm resulted from lesions of internuncial neurons have attributed this effect to an inhibition of proprioceptive reflex activity. A similar effect of cholinergic drugs on hemiplegias and other spastic conditions was described earlier by a number of French workers, quoted by Ward and Kennard,[2d] and has been investigated more recently by Kremer [2b] who demonstrated a depression of deep reflexes and a lessening of spasticity in patients with lesions of the pyramidal tract to whom neostigmine was administered intrathecally. Ward and Kennard [2d] have shown that monkeys to which cholinergic drugs were administered after unilateral ablation of areas 4 and 6 of the cerebral cortex recovered muscular function more rapidly and more completely than did control animals after the same operation. From a preliminary survey of a number of conditions which have muscular spasm in common, e. g., hemiplegia, cerebral infarctions and rheumatoid arthritis, Kabat [2a] concluded that the majority of patients improved remarkably after the administration of neostigmine. According to Kabat the improvement consisted not only in relief of spasm and pain but also in increase of the range of motion. Relief of the spasm in rheumatoid arthritis by means of this drug has been described by Trommer and Cohen.[2e]

Increase in vital capacity and relief of respiratory distress in this patient after the administration of neostigmine methylsulfate are less easily explained on the basis of lessened antagonist spasticity. However, spasticity of the muscles of the neck and back in general and of the accessory muscles of respiration in particular may have contributed to the respiratory difficulty. If so, relief of such spasm effected by neostigmine might account for the increase in vital capacity noted after the use of the drug. It is of interest that the effect of the drug disappeared as the vital capacity of the patient returned to the normal level for his calculated surface area. In similar experiments on normal patients of approximately the same age and size, no increase of vital capacity was observed after the administration of neostigmine (table 1).

CONCLUSION

Evidence is presented which indicates that neostigmine methylsulfate administered subcutaneously, to a 10 year old boy suffering from infectious neuronitis was effective in increasing the vital capacity and in tiding the patient over a critical period of respiratory difficulty. It seems possible that in such cases increased vital capacity induced by the drug might obviate the necessity for the respirator. In this patient relief of pain subsequent to injection of the drug was noteworthy. Increase in muscular power and improvement in phonation and deglutition during the early stages of the disease were definite and reproducible. Later in the course of the disease these effects were less striking in character and more transitory. The suggestion is offered that the increased muscular and respiratory efficiency observed in this patient subsequent to the administration of neostigmine methylsulfate may have been brought about by relief of spasm of antagonistic muscles.

DISSEMINATED CHICKENPOX (PNEUMONIA AND NEPHRITIS)

CHARLES E. GRAYSON, M.D.
and
ELIZABETH J. BRADLEY, M.D.
San Francisco

The radiologist is usually confronted with several possibilities in the interpretation of roentgenograms of the chest in the presence of pathologic changes. The interpretation is increasingly dependent on associated clinical and laboratory data. The addition of cases with more detailed studies assists in the possibility of better differentiation of pathologic entities.

With the further recognition of various virus infections involving the lungs and their differentiation by serologic methods, there is greater assurance that the process is actually the result of the viral agent and not merely a concomitant or superimposed bacterial infection. The advent of more effective bactericides which are used, at times, as a therapeutic test against possible pathogenic bacteria enhances the assurance of virus etiology alone.

Among the virus diseases less frequently revealing pulmonary manifestations are those that affect the skin and mucous membranes primarily. Pneumonia, however, is not infrequently seen in measles and has been reported in smallpox contacts.[1] Disseminated chickenpox with pulmonary and renal lesions has been

From the Departments of Radiology and Communicable Diseases, San Francisco Hospital. (Department of Public Health, J. C. Geiger, M.D., Director.)

1. Howat, H. T., and Arnott, W. M.: Outbreak of Pneumonia in Smallpox Contacts, Lancet **2**: 312 (Sept. 2) 1944.

recognized. Bullowa and Wishik [2] observed pneumonia in 0.8 per cent and nephritis in 0.1 per cent of 2,534 cases, with, however, pathogenic bacteria also present and thought to be the complicating agent. Gill [3] in a review of the literature showed nephritis as a complication in varying percentage, roughly 0.1 to 0.5 per cent with an interval of one to twenty-four days between the eruption and the onset of nephritis. Waring, Neubuerger, and Geever [4] reported some details of 8 cases in which the histologic appearance was considered as not being characteristic of the virus type of pneumonia. They reported 1 case complicated with pneumonia and a second fatal case with lobar pneumonia, encephalitis and nephrosis. Pathogenic bacteria were associated with the disease in both these cases, although Waring and his associates believed that the histologic observations in the fatal case were those of a virus type of infection. Rausch, Grable and Musser [5] reported a case of chickenpox in an adult with pneumonia. They considered that this was probably due to chickenpox, but there was apparent response of the fever to sulfathiazole therapy. The absence of leukocytosis was a factor in their consideration.

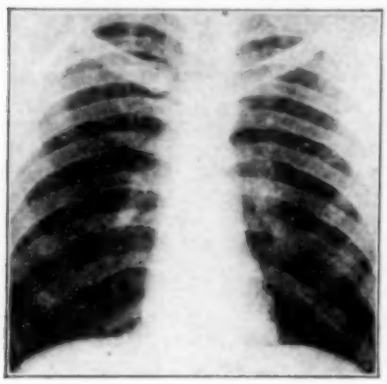


Fig. 1.—A few scattered, small, scarcely visible densities revealed by roentgenogram of chest on entry.

Fig. 2.—Pronounced increase in the pulmonary density in the perihilar and midlung areas; slight cardiac enlargement.

REPORT OF A CASE

The report of a case in which no evidence of bacterial infection was obtained is as follows:

History.—A white man aged 34, an American seaman, entered the isolation division of San Francisco Hospital for the first time on April 14, 1946. His complaints were fever of four days' duration with a rash for two days. The present illness began four days before entry when the patient noticed general malaise and fever followed by a few chills. After two days he lost his appetite, and a rash began to develop over his chest, arms, face and neck. A nonproductive cough developed one day later. His family history was noncontributory. He denied any association with tuberculosis. His past illnesses included measles, whooping cough and typhoid fever with pneumonia in 1923.

Physical Examination.—On entry examination revealed a well developed man who was not in acute distress. The temperature was 103 F., the pulse rate 85 and the respiratory rate 24. The skin showed a pleomorphic maculopapular and vesicopapular rash on the trunk, face and neck, and there were a few lesions on the arms and thighs. The lesions varied from macules 1 to 5 mm. in diameter to papules and vesicles of 2 to 5 mm. in diameter. Some older lesions were crusted and healing. They were surrounded by a red areola. The eyes showed a mild degree of conjunctivitis and there was an acute type of rhinitis with some dicharge. No Koplik's spots were visible, but there were some pleomorphic lesions in the mouth, as described previously. The lungs were clear to auscultation and percussion, although the patient coughed constantly throughout the examination. The abdomen and genitalia were not remarkable. The reflexes were physiologic.

A roentgenogram of the chest on entry revealed a few scattered, small, scarcely visible densities (fig. 1).

Laboratory Findings.—The Wassermann test of the blood was negative. On April 15, 1946 the icteric index was 12.6, the Takata-Ara reaction was negative. The level of total serum proteins was 5.0 Gm., with albumin 3.4 Gm. and globulin 1.6 Gm., per hundred cubic centimeters.

Four cultures of blood taken over a period of one month showed no growth of organisms.

Examinations of sputums were negative, except for normal flora in the respiratory tract. Pneumococci or hemolytic streptococci were not found.

Test for cold agglutinins on April 18, April 25 and May 2, 1946 were negative in all dilutions.

The determination of serum proteins on May 23, 1946 gave 5.73 Gm. total, with albumin 3.05 Gm. and globulin 2.68 Gm., per hundred cubic centimeters.

The blood urea level on May 23 was 24 mg. per hundred cubic centimeters.

Serum tests for psittacosis antigen by complement fixation test gave a negative reaction. Agglutination reactions were negative for typhoid, paratyphoid A and B and undulant fever antigens.

Course.—On the second hospital day of the patient marked conjunctivitis developed, and the dry cough noted on entry became severer. The lungs were resonant to percussion throughout, with fine crackling rales at the right base posteriorly. He was given an initial dose of 4 Gm. sulfadiazine, followed by 1 Gm. every four hours for four days. During this period the pulmonary signs became more pronounced and the patient remained febrile. On the fourth hospital day wheezes and rales were heard over the entire chest. The patient became extremely cyanotic and dyspneic. Theophylline ethylenediamine (0.5 Gm.) was given intravenously, without noticeable relief.

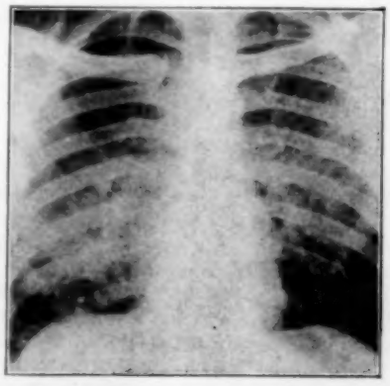


Fig. 3.—Partial clearing of the pulmonary densities.

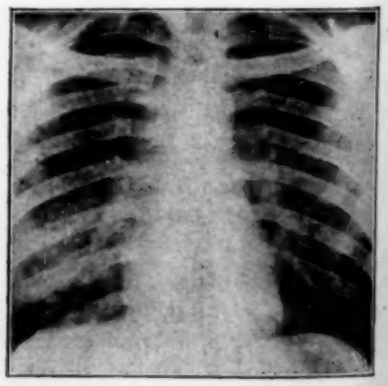


Fig. 4.—Decided regression of the pulmonary densities.

There were visible in the roentgenogram of the chest taken at this time diffuse, finely nodular infiltrations throughout both lung fields. These were more definite in the midportions and particularly about the hilar regions. The perihilar density was suggestive of pulmonary edema. Some increase in the size of the cardiac shadow was observed (fig. 2). The patient was placed in an oxygen tent for several days, which afforded him great relief, and was given 20,000 units of penicillin every three hours for five and one-half days, but his temperature remained elevated. On the eleventh hospital day he became subjectively well. The lesions of the skin were almost entirely healed. The

2. Bullowa, J. G. M., and Wishik, S. M.: Complications of Varicella: Their Occurrence Among 2,534 Patients, Am. J. Dis. Child. **49**: 923-926 (April) 1935. Wishik, S. M., and Bullowa, J. G. M.: Complications of Varicella: Surface Complications, ibid. **49**: 927-932 (April) 1935.

3. Gill, D.: Nephritis as Complication of Varicella, Arch. Pediat. **59**: 587-593 (Sept.) 1942.

4. Waring, J. J.; Neubuerger, K. T., and Geever, E. F.: Severe Forms of Chickenpox in Adults with Autopsy Observations in Case with Associated Pneumonia and Encephalitis, Arch. Int. Med. **69**: 384-408 (March) 1942.

5. Rausch, L. E.; Grable, T. J., and Musser, J. H.: Atypical Pneumonia Complicating Severe Varicella in Adult, New Orleans M. & S. J. **96**: 271-275 (Dec.) 1943.

lungs seemed clear by auscultation and percussion. On the thirteenth hospital day the mottled densities seen on the roentgenograms of the chest were still present, although less pronounced and slightly reticular in appearance. The slight cardiac enlargement persisted (fig. 3). On the same day the patient's temperature rose to 102 F., and he remained febrile for seven days more. Blood cultures made during this time were negative. Chest roentgenograms on the twenty-seventh hospital day revealed still further clearing of the pulmonary densities (fig. 4). On the twenty-eighth hospital day urinalysis revealed albumin (2 plus) and an occasional erythrocyte, although the patient seemed clinically well. He was discharged to private care and was not available for further follow-up.

Tables 1 and 2 show the course of cellular elements in the blood. It is of interest to note that, at the height of his pneumonia, the patient had a leukopenia with no increase in neutrophils but, rather, an increase in lymphocytes.

A roentgenogram of the chest on discharge revealed almost complete clearing of the lung fields and return of the cardiac shadow to its original configuration.

TABLE 1.—*Data on Blood*

Date	Hemoglobin (Sahli)	White Blood Cells	Polymorphonuclears	Eosinophils	Monocytes	Lymphocytes	Packed Cell Volume	Corrected Sedimentation Rate *
4/14/46	98%	4,000	84% (76/8)	0	0	16%		
4/17/46	92%	7,600	76% (64/12)	0	0	24%		
4/26/46	84%	6,400	64% (58/6)	3%	1%	32%		
4/30/46	....	7,400	65% (62/3)	0	0	35%	33	4
5/ 7/46	98%	11,400	76% (72/4)	2%	4%	18%		
5/11/46	....	8,400	66% (54/12)	2%	5%	27%		
5/14/46	....	.....	.....	...	...	....	39	36
5/23/46	86%	8,600	66% (64/2)	2%	4%	28%		

* Wintrobe.

TABLE 2.—*Data on Urinalyses*

Date	Color and Amount	Specific Gravity	Reaction	Albumin	Sugar	Acetone	Sediment
4/15/46 (voided)	Amber	1.022	5.5	None	None	None	Granular casts, a few; hyaline casts a few; WBC, 6-8/hpf; RBC, none
5/10/46 (voided)	Yellow	1.004	...	++	None	None	WBC, 2-4/hpf; RBC, 1/hpf; casts, none
5/21/46 (Addis count)	Yellow 1,030 cc./24 hrs.	1.024	5.8	2.1 Gm./24 hrs.	None	None	(Amount in 24 hrs.) casts = 900,000 (600,000 hyaline, 300,000 granular); RBC, 34 million; WBC, 7 million

COMMENT

The chronologic association of roentgenograms of the chest with laboratory tests and with clinical signs and symptoms was made purposefully. Only minimal pulmonary densities were seen at first, despite symptoms. These persisted long after the signs and symptoms had disappeared. The degree of the pulmonary involvement coincided with the course of cutaneous manifestations. The diffuse patchy involvement shown and described in the literature was noted.[6] The increase in the size of the heart was also shown, with its return to the original size on regression of the pulmonary changes.

On the twenty-eighth hospital day there appeared clinical evidence of nephritis, which was not present before and which had been looked for during and shortly after the sulfadiazine therapy. Hematuria and albuminuria persisted thereafter and remained about the same. Excretory urography was done once and did not show any morphologic or functional abnormality.

Response to sulfadiazine or penicillin therapy by clinical improvement or lowering of temperature was lacking. There was later improvement in this regard without either of these therapeutic agents. No pathogenic bacteria could be recovered from the blood or from samples of sputum. These observations certainly do not favor belief in the presence of a concomitant or secondary bacterial infection. Bacterial infection in already diseased tissues was probably prevented by the use of sulfadiazine and penicillin. Reactions to agglutination tests helped to rule out at least one of the more frequent and one of the less frequent forms of virus pneumonia. Lack of facilities prevented the determination of antistreptolysin titer. All the changes observed were probably due to the chickenpox.

6. Waring, Neubuerger and Geever.[4] Rausch, Grable and Musser.[5]

SUMMARY

A case of disseminated chickenpox with recovery is reported. Pneumonia and nephritis were present without any demonstrable pathogenic bacteria in the upper part of the respiratory tract or in the circulating blood.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following report. HOWARD A. CARTER, *Secretary.*

TRIBUTE TO THE MEMORY OF DR. EBEN J. CAREY

The Council on Physical Medicine of the American Medical Association records with deep sorrow the death of

Eben James Carey

When death came to Eben James Carey on the morning of June 5, 1947, the Council lost one of its most active and helpful members, and American medicine one of its respected teachers and research workers. Death was caused by acute infectious hepatitis.

Dr. Carey was born in Chicago on July 31, 1889. He was graduated from Rush Medical College, Chicago, in 1925 and served an internship at the Presbyterian Hospital in that city. He received the bachelor of science, master of science and doctor of science degrees from Creighton University in Omaha, where he taught for six years before coming to Marquette University in 1920. While at Marquette he was dean of medical students from 1921 to 1928, medical director of the Free Dispensary from 1924 to 1928 and chief of staff of the University Hospital from 1926 to 1928.

He was a fellow of the American Association for the Advancement of Science and the New York Academy of Medicine, a member of the Milwaukee Academy of Medicine, serving as its president in 1939 and 1940, Chicago Institute of Medicine, the American Association of Anatomists and formerly vice president of the Association of American Medical Colleges.

The Radiological Society of North America awarded him a gold medal in 1933 in recognition of his x-ray study of bone growth. He was chairman of the program committee of the Council on Scientific Work of the State Medical Society of Wisconsin, which in 1938 presented him with the Council award.

One of Dr. Carey's especial interests was the dissemination of scientific health information to the public; his work in this field was based on the conviction that museum exhibits can be interesting and practical without sacrificing accuracy. The success of the displays in the Hall of Science at Chicago's Century of Progress was largely due to the enthusiasm with which he planned the medical portions of the work and the eagerness with which he visited institutions, especially in Europe, in search of suggestions. His ability to rouse popular interest enabled him to advance the cause of physical medicine in Wisconsin perhaps more than any other individual there.

As a member of the Council on Physical Medicine he was able to make special contributions because of his interest in body mechanics, the details of kinesiology and especially the minutiae of the function of the vertebral column. In the last months of his life he was actively interested in interpreting the significance of atomic energy to the medicine of the future; he contributed a well considered report on that subject at the meeting of a committee of the Council on Dec. 12, 1946.

Members will miss Dr. Carey for the buoyant, cheerful effectiveness with which he went to work on the various problems of the Council.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street - - Chicago 10, Ill.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Eight dollars per annum in advance

Please send us promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, AUGUST 9, 1947

PROPAGANDA ACTIVITIES OF GOVERNMENT AGENCIES

In a report [1] to the House of Representatives it is charged that certain government agencies are using public funds in an improper manner for propaganda activities in support of a program of national compulsory health insurance. The agencies listed are the U. S. Public Health Service, Children's Bureau, Office of Education, U. S. Employment Service, Department of Agriculture and the Bureau of Research and Statistics of the Social Security Board.

On Dec. 10, 1945 the Surgeon General of the Public Health Service, Dr. Thomas Parran, wrote to all field men and staff operators of the Public Health Service throughout the country referring to the President's message to Congress, which urged enactment of a national health program. In this letter [2] Dr. Parran said "Every officer of the Public Health Service will wish to familiarize himself with the President's message and will be guided by its provision when making any public statement likely to be interpreted as representing the official views of the Public Health Service." Pursuant to this policy, according to the report, the public health service planned a series of conferences and "health workshops," so called, to be held in various states. It appears that full time government employees were sent, for a purpose, on these trips and that their traveling expenses cost the taxpayers nearly $5,000. This, the House committee found, was an unlawful use of federal funds, and the matter has been referred to the Department of Justice.

The "health workshop" held at Jamestown, N. D., Sept. 27-30, 1946 was attended by eighteen government employees who were away from their desks for a total of 126 man days. The chairman of this conference was Mayhew Derryberry, Ph.D., of the Public Health Service. The conference held at the University of Chicago to plan the propaganda campaign was attended by nine government employees and eleven representatives of labor organizations and the Farmer's Union. The "health workshop," held at St. Paul, was attended by eighty persons, including fifteen government employees. The leaders or "training officers" at the "health workshops" used instruction sheets on which the following topics were listed: (1) formation of pressure groups, (2) technics for the organization of citizen groups and (3) methods of bringing about group actions. The Public Health Service distributed to the invited delegates pamphlets in support of socialized medicine, published by government bureaus, the C. I. O., the A. F. of L. and the Physicians Forum, the latter said to be a propaganda agency for the Wagner-Murray-Dingell bill. The delegates thus indoctrinated were then given tests to determine their ability for leadership. It was interesting, a witness said, to note that when left to themselves the delegates were unable to think of any particular health problems in his state.

The House committee found that most of this literature, as distributed by the C. I. O., the A. F. of L., the Farmer's Union and the Physicians Forum originated in the Bureau of Research and Statistics of the Social Security Board, with which Mr. Isadore Falk is closely associated. Indeed, a member of his staff, Miss Margaret Klem, is said to have helped draft the Wagner-Murray-Dingell bill.

The testimony of Dr. Herman Hilleboe, then Assistant Surgeon General and now health officer of the state of New York, according to the committee report, reflected the spirit which dominates officials of the Public Health Service in the campaign to high pressure this legislation through Congress. Dr. Hilleboe was asked whether the literature prepared by the federal agencies discussed both sides of the question or was limited to material supporting President Truman's desire for a national health program. Dr. Hilleboe replied "We would naturally give emphasis to that, because that is why we are in government. Otherwise, we should get out of government." An attitude of intolerance toward honest discussion of the issue was shown also by another witness, Mr. Harry J. Becker of the Children's Bureau, who made speeches throughout the country in advocacy of the President's national health program. Mr. Becker was asked "Did you give both sides of the question of compulsory health insurance when you gave your discussions?" Mr. Becker replied "I don't know what you mean by both sides." His testimony before the House committee, it is said, typically disclosed how funds appropriated by Congress are diverted to propaganda favoring socialized medicine. The committee has evidence that the Bureau of Research and Statistics in the Social Security Board, of which Mr. Isadore Falk is the director, maintains close contact with movements for compulsory health insurance in other countries. Only last May Mr. Falk requested that Jacob Fisher, one of Mr. Falk's assistants,

1. Third Intermediate Report of the Committee on Expenditures in the Executive Departments, House Report 786 of the First Session, 80th Congress, submitted July 2, 1947 to the Committee of the Whole House on the State of the Union.
2. The Journal, Jan. 12, 1946, p. 84.

be sent to New Zealand at government expense to study compulsory health insurance programs. Jacob Fisher, by the way, is well known by the House Committee on Un-American Activities, and the committee expects later to present to Congress a detailed record of his activities.

In the meantime the intermediate report of the House Committee on Expenditures in the Executive Departments is a sad reflection on the U. S. Public Health Service and some other government agencies involved. It should be emphasized that a public health service that is authorized to administer millions of dollars of public funds to carry on scientific medical research and that is constantly expanding its activities to reach the lives of more and more of our people should be kept free from such activities as are disclosed in this report. That is what this country expects of its Public Health Service.

ANURIA OF THERMAL BURNS

Hemoglobinuria is an early complication of severe burns; it results from the rapid destruction of red cells; hemoglobinemia is associated with consequent excretion of free hemoglobin in the urine. Shen and his co-workers [1] found gross hemoglobinuria in 9 patients and minimal hemoglobinuria in 2 among 40 patients of the Cocoanut Grove fire who had second and third degree thermal burns involving 15 to 65 per cent of the body area. Damaged renal function, according to Olson and Necheles,[2] is similar to that following hemolysis from incompatible blood transfusion, blackwater fever and other hemolytic diseases. The common factor in all these cases was intravascular hemolysis due to the sudden and rapid destruction of red cells or muscle cells. Ross [3] stresses that the escape of large quantities of hemoglobin from erythrocytes into the plasma is almost invariably followed by grave symptoms and frequently by death.

Olson and Necheles conducted animal experiments to determine the relative effectiveness of present methods of relief in burn anurias. Following experimental thermal burns, the abdomens of the animals were opened and each ureter was cannulated and connected to a sensitive drop recorder and counter which registered on a kymograph the urine excreted from each kidney. The severity of this experimental anuria could be correlated in most of their experiments with the degree of hemoglobinemia. They regarded, therefore, the amount of free hemoglobin in the plasma as a basis for comparing the therapeutic value of infusion fluids and diuretics. They found that plasma and saline solutions were the least effective infusion fluids for combating the anuria. They list the following solutions in increasing order of effectiveness: sodium lactate, 5 per cent dextrose in isotonic solution of three chlorides, 2 per cent urea in saline solution and 0.9 per cent saline solution with 0.87 per cent sodium bicarbonate. These solutions were effective in instances in which kidney damage was not great. Isotonic sodium sulfate, recommended originally by Maitland [4] for the treatment of the crush kidney, proved to be the most effective agent in combating the burn anuria. It has overcome anuria in all their experiments, including one of severe type in which the free plasma hemoglobin was over 4,000 mg. per hundred cubic centimeters. The concentration of free hemoglobin in the plasma was most effectively decreased by the use of sodium sulfate. While infusions of plasma gave an apparent reduction of plasma hemoglobin, this was demonstrated to be associated with the more prolonged diluting effect of the plasma.

The following substances had little diuretic effect when kidney impairment was great: mercuzanthin, aminophylline, thiamine, hydrochloride, ascorbic acid, nicotinic acid, vitamin B_2 and vitamin B_6. As to the danger of the use of isotonic sodium sulfate, Maitland has given in some of his cases as much as 8 liters during the first eleven days, with complete recovery. Olson and Necheles believe that it might be possible to give an initial injection of sodium sulfate to start the flow of urine and then to follow this with other diuretic agents.

1. Shen, S. C.; Ham, T. H., and Fleming, Eleanor M.: Studies on the Destruction of Red Blood Cells, New England J. Med. **229**: 701 (Nov. 4) 1943.
2. Olson, W. H., and Necheles, Heinrich: Studies on Anuria, Surg., Gynec. & Obst. **84**: 283 (March) 1947.
3. Ross, J. F.: Hemoglobinemia and the Hemoglobinurias, New England J. Med. **233**: 691 (Dec. 6) 1945.
4. Maitland, A. I. L.: Crush Injuries, Brit. M. J. **1**: 570 (April 12) 1941.

Current Comment

FOLIC ACID IN BLOOD

Folic acid has been recognized as one of the vitamins of the B complex. Within the past few years it has been shown to be required for growth in the rat and for normal red cell production in the chick. Its beneficial effects in pernicious and other macrocytic anemias in man have been demonstrated,[1] and use of a microbiologic method of assay has revealed that whole blood of man and of cattle contains 2 micrograms of free folic acid per hundred cubic centimeters, whereas four to eight times as much is present in the whole blood of pigs, chickens and turkeys.[2] In all these species the plasma was found to contain less free folic acid than does the whole blood. When the blood was digested with the enzyme taka diastase, the folic acid conjugate was hydrolyzed with the release of large increments of the free vitamin, which in human blood amounted to forty to seventy times more than was originally present. Should it be demonstrated that the

1. Spies, T. D.; Suarez, R. M.; Suarez, R. M., Jr., and Hernandez-Morales: Science **104**: 75 (July 26) 1946. Moore, C. V.; Bierbaum, O. S., and Welch, A. D.; Fed. Proc. **5**: 236 (Feb.) 1946. Goldsmith, G. A., ibid. **5**: 232 (Feb.) 1946; Proc. Soc. Exper. Biol. & Med. **64**: 115 (Jan.) 1947.
2. Schweigert, B. S., and Pearson, P. B.: Am. J. Physiol. **148**: 319 (Feb.) 1947.

diet influences the blood concentration of folic acid, the adequacy of nutrition with respect to this important food factor can be demonstrated by this convenient and accurate type of blood analysis.

THE PREVENTION OF AIR BORNE STREPTOCOCCIC INFECTION

In a review of the transmission by air of certain infectious diseases Robertson [1] deals especially with air borne streptococcic infection as studied in the army during the war. The spread of hemolytic streptococci was traced by virtue of their characteristic growth on blood agar and their occurrence in distinct serologic types. Cultures of the air in army hospitals and barracks revealed definite association between certain types of air borne streptococci and infections due to those types. Infected patients and healthy carriers are the primary sources of air borne pathogenic streptococci; secondary reservoirs are built up by accumulations in bedding, clothing and floor dust, from which they spread into the air. Direct association has been demonstrated between sweeping floors and making beds and the numbers of hemolytic streptococci recovered from the air. The fact that in a few hours the environment might become heavily seeded with hemolytic streptococci led to special studies of the ways in which the carrier contaminates his surroundings. It was found that "the largest numbers of streptococci were dispersed by persons harboring these micro-organisms in their noses; and, since such persons have been found to be the principal agents in the spread of streptococcic disease, they are to be regarded as dangerous carriers." Blowing the nose, sneezing and handling the nose and mouth by the carrier are regarded as the principal ways of contaminating the patient's clothing, the bedding, the air, the floor and other horizontal surfaces. Oiling clothing and floors restrains greatly the spread of streptococci in the air from these secondary reservoirs. The studies of triethylene glycol vapors as means of controlling the aerial spread of respiratory infection "are as yet too few to more than indicate promise," but notable advance has certainly been made toward the prevention in civil as well as military practice of the spread of respiratory infections by hemolytic streptococci.

1. Robertson, O. H.: The Dispersal of Respiratory Pathogens in Relation to the Occurrence and Control of Air Borne Infections. Am. Rev. Tuberc. **55**: 109 (Feb.) 1947.

PUBLICATIONS OF THE COUNCIL ON PHARMACY AND CHEMISTRY

The publications of the Council on Pharmacy and Chemistry have long been used for pursuing rational therapeutics. New and Nonofficial Remedies, Useful Drugs and the Epitome of the U. S. P. and N. F. are titles familiar to physicians and medical students, and their usefulness is well known. The frequent revisions of these books provide authoritative information on what is new and of proved value. These Council sponsored volumes have just undergone revision and are now available from the publisher, the J. B. Lippincott Company, Philadelphia. New and Nonofficial Remedies contains the most recent information on the drugs accepted by the Council as of Jan. 1, 1947. The book is revised annually. This year the format has been changed slightly to place descriptions, actions, uses and dosage, and accepted brands and dosage forms in one section, and the tests and standards in another section. The latter are arranged alphabetically, while the former are grouped, as they have been for the past few years, in twenty-five chapters, the first one entitled "Agents Used in Allergy" and the last one "Vitamins and Vitamin Preparations." Useful Drugs and the Epitome likewise have undergone thorough revision. The consensus on what is the best in modern drug therapy is reflected in these publications of the Council on Pharmacy and Chemistry.

DESOXYRIBONUCLEIC ACID AND BACTERIAL "MUTATIONS"

For a number of years bacteriologists have known that the rough or avirulent strain of pneumococcus can be changed to the smooth or virulent strain by a number of successive animal passages. This change from the R to the S strain also follows a single injection if a vaccine prepared from the S strain is injected along with the R strain.[1] When it is changed to the S strain an R strain may revert to the type of pneumococcus from which it was derived or, depending on conditions, may change to another type, the type from which the vaccine was prepared. Through the intermediate R forms, type II S pneumococcus has been changed successively to types III S, II S and IV S.[2] These changes also take place in vitro in suitable culture mediums. The substance causing this transformation has been isolated and shown by serologic, chemical and enzyme methods to be desoxyribonucleic acid; it is active in dilutions as high as 1 : 30,000. An amount of purified nucleic acid splitting enzyme prepared from pancreas, desoxyribonuclease, added to a reaction system in amounts as small as 0.0012 microgram per cubic centimeter, inactivates the transforming substance.[3] The desoxyribonucleic acid fractions obtained from the various types of pneumococci cannot be differentiated on a chemical or serologic basis. These fractions do differ, however, in that they cause change of R forms to different types, the types from which the fractions were obtained.[4] The change of R to S forms which results from successive animal passage may be due to the action of small amounts of the specific desoxyribonucleic acid. The heat labile inhibiting substance for these changes found in serum may be desoxyribonuclease. Investigators have refrained from calling these changes true genetic mutations. The action of the transforming substance has been compared with the action of a virus and also with the causative agent of some fowl tumors. As the differences in form of these bacteria are attributable to differences in genetic structure, the change from one form to another, it would seem, must be attributed to genetic mutation.[4]

1. Griffith, F.: J. Hyg. **27**: 113 (Jan.) 1928.
2. Dawson, M. H.: J. Exper. Med. **51**: 123 (Jan.) 1930.
3. McCarty, Maclyn, and Avery, O. T.: J. Exper. Med. **83**: 89 (Feb.) 1946.
4. McCarty, Maclyn, and Avery, O. T.: J. Exper. Med. **83**: 97 (Feb.) 1946.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Aug. 6, 1947.

Replacement for General Bradley as Veterans Chief

Gen. Omar Bradley is slated to succeed General Eisenhower as army chief of staff following his six weeks tour of American outposts in Europe starting August 15. President Truman and his administration leaders are reported to be searching for a man to carry through Bradley reforms in the Veterans Administration, where he is now serving as administrator. Assisted by Major Gen. Paul R. Hawley, chief medical director of the agency, General Bradley is credited with making valuable improvements in the medical and other departments. Leading physicians and the larger medical schools now participate in the program. The Veterans Administration has more than 200,000 employees. Although Congress stressed economy in appropriations during the session just concluded, the agency will have $20,000,000 more than Mr. Truman requested for the medical and hospital departments. However, the agency's administrative staff must be reduced.

Study of Psychologic Aspect of Human Resources in Wartime

Dr. Vannevar Bush, chairman, Joint Research and Development Board, has announced formation of a committee on human resources to study the human element in modern warfare, particularly problems of psychology. On the committee are Donald C. Marquis, president, American Psychological Association; C. L. Shartle, psychology department, Ohio State University; Frederick F. Stephan, sociology department, Cornell University; Samuel A. Stouffer, social relations department, Harvard University; Major Gens. Fred L. Anderson and Raymond W. Bliss, and Col. Fred C. Miller, U. S. Army, A. H. Hausrath, Office of Naval Research; Rear Admiral J. W. Roper, U. S. Army, and Capt. D. T. Eddy, U. S. Navy.

Senator Advocates Hospital Commemorating Booker T. Washington

Senator Revercomb, West Virginia, urged action on his proposal that a hospital for Negro war veterans be erected in Franklin County, Va., at the birthplace of Booker T. Washington. The Veterans Administration is stated to have opposed the plan on grounds that a hospital for Negro veterans should be near a Negro medical center.

Georgetown University Hospital Opened

The new Georgetown University Hospital has been opened to the public. The new hospital increases patient capacity from 241 to 407 and replaces old cramped quarters with modern facilities. For some time the institution has provided the only free medical care in the western limits of the Capital. Since the Veterans Administration abandoned the Nevius tract in Arlington, Va., as a site for the projected veterans' hospital, the National Capital Park and Planning Commission has been studying other sites.

Vice Admiral McIntire Heads National Group to Employ Handicapped

Vice Admiral Ross T. McIntire, former Surgeon General of the Navy, was elected president of the National Association for Employment of the Handicapped, succeeding Major General Graves B. Erskin, U. S. Marine Corps, who returned to active duty. Dr. Merle E. Frampton, principal of the New York Institute for Education of the Blind, became vice president. Virgil Smirnow, assistant to the director of the B'nai B'rith vocational service bureau, was named executive secretary of the National Association of the Handicapped, Inc.

House and Senate Differ on Funds Allotted for Atomic Cancer Research

The House allocated $25,000,000 for cancer research to the Atomic Energy Commission, but a Senate spokesman indicated that the Senate would set a $5,000,000 limit for this purpose. The Congressional dispute over the amount of funds for cancer research arose during discussion of total funds for the agency. Chairman David Lilienthall and member L. L. Strauss said the commission had not asked for funds for this purpose and the House item came as a surprise. Senators Reed of Kansas, Saltonstall of Massachusetts and Tydings of Maryland said they believed there might be overlapping in cancer research. The American Cancer Institute raised $13,000,000 for research through public contributions, and the National Cancer Institute received $14,000,000 from Congress. The commission is the only agency allowed to produce radioactive materials for cancer research, and some 60 institutions are being supplied. The commission announced that Los Alamos, N. M., principal center for military applications of atomic energy, where the first A bomb was made, is now a permanent establishment.

Coming Medical Meetings

American Association of Medical Record Librarians, New York, Hotel Commodore, Sept. 7-12. Mrs. Adaline Hayden, 18 E. Division St., Chicago, Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., The Homestead, Sept. 4-6. Dr. James R. Bloss, 418 Eleventh St., Huntington 1, W. Va., Secretary.

American College of Surgeons, New York, Waldorf-Astoria Hotel, Sept. 8-12. Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Congress of Physical Medicine, Minneapolis, Hotel Radisson, Sept. 2-6. Dr. Richard Kovacs, 2 E. 88th St., New York 28, Secretary.

American Congress on Obstetrics and Gynecology, St. Louis, Municipal Auditorium, Sept. 8-12. Mr. Karl S. Richardson, 24 West Ohio St., Chicago, Business Manager.

American Roentgen Ray Society, Atlantic City, Sept. 16-19. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Secretary.

Colorado State Medical Society, Denver, Shirley-Savoy Hotel, Sept. 17-20. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver 2, Executive Secretary.

International Cancer Research Congress, St. Louis, Hotel Jefferson, 2-7. Dr. Axel N. Arneson, 510 S. Kingshighway, St. Louis, Chairman Committee on Local Arrangements.

International College of Surgeons, U. S. Chapter, Chicago, Palmer House, Sept. 29-Oct. 2. Dr. Louis J. Gariepy, 16401 Grand River Ave., Detroit 27, Secretary.

Kentucky State Medical Association, Louisville, Sept. 29-Oct. 2. Dr. P. E. Blackerby, 620 S. Third St., Louisville 2, Secretary.

Michigan State Medical Society, Grand Rapids, Pantlind Hotel, Sept. 24-26. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

Mississippi Valley Medical Society, Burlington, Iowa, Oct. 1-3. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
Woolsey, 316 Atlas Bldg., Salt Lake City 1, Secretary.

National Medical Association, Los Angeles, Aug. 18-22. Dr. John T. Givens, 1108 Church Street, Norfolk 10, Va., Secretary.

Nevada State Medical Association, Reno, Sept. 4-6. Dr. Moreton J. Thorpe, 17 N. Virginia St., Reno, Secretary.

Oregon State Medical Society, Portland, Sept. 4-6. Dr. Thomas S. Saunders, 1020 S. W. Taylor St., Portland 5, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Hotel William Penn, Sept. 15-18. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh 22, Secretary.

Southeastern Dermatological Association, Knoxville, Tenn., Hotel Andrew Johnson, Aug. 31. Dr. A. H. Lancaster, 608 W. Main Ave., Knoxville, Secretary.

Utah State Medical Association, Salt Lake City, Sept. 11-13. Dr. Ray T. Woolsey, 316 Atlas Bldg., Salt Lake City 1, Secretary.

Vermont State Medical Society, Burlington, Hotel Vermont, Oct. 1-3. Dr. Theodore H. Harwood, 128 Merchants Row, Rutland, Secretary.

Washington State Medical Association, Seattle, Olympic Hotel, Sept. 28-Oct. 1. Dr. Harold E. Nichols, 327 Cobb Building, Seattle, Secretary.

Western New York and Ontario Urological Society, Saranac, N. Y., Saranac Inn, Sept. 3-6. Dr. Albert M. Crance, 525 S. Main St., Geneva, N. Y., Secretary.

World Medical Association, Paris, France, Sept. 17-20. Dr. Charles Hill, B. M. A. House, Tavistock Sq., London, W. C. 1, England, and Dr. P. Cibrie, 60 boulevard de Latour-Maubourg, Paris 7e, France, Joint Secretaries.

Bureau of Information

LOCATION OF PHYSICIANS

Virginia Shuler
Chicago

This is the seventh of a series of charts showing the trend in locations of physicians from April 1946 to January 1947.

"Regarding the distribution of physicians for Georgia, it must be remembered this state is largely rural and that we have 159 counties. To say that a county has only one or perhaps as many as two physicians does not mean the people of our state are suffering for the want of medical care. Indeed, a survey of seventeen counties by the Medical Association of Georgia in cooperation with the United States Public Health Service, before the war, indicated that only two persons had failed to obtain the services of a physician when they sought such services, and one of these persons stated his physician was ill and was unable to respond to the call.

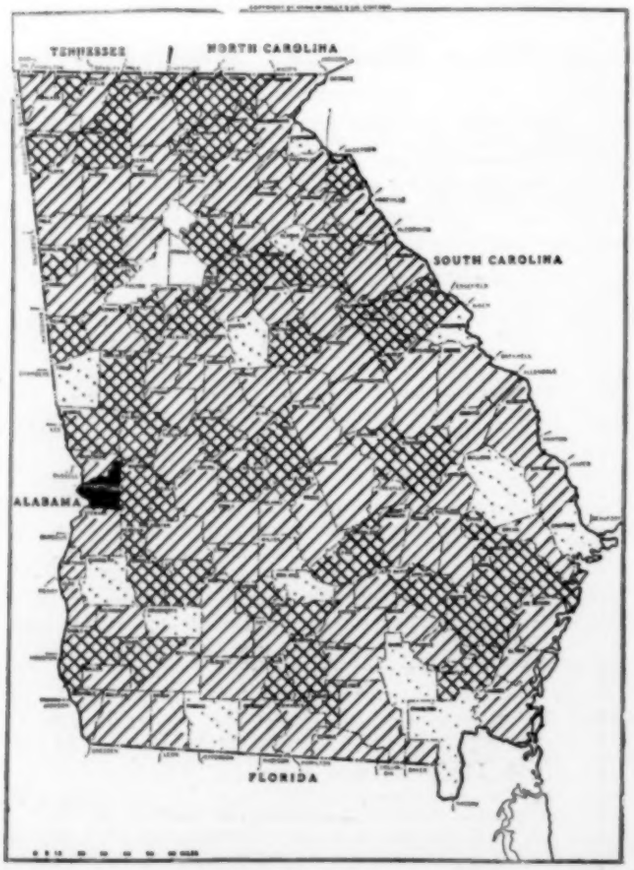
"Georgia sent more than 600 physicians to the war. During this period the people of our state cooperated with the profession and there is no record of any patient really suffering for the want of medical care. Many of these physicians have returned to their practices, and conditions for the state as a whole are improving daily. A number of new hospitals have been built and equipped and others are in the planning for the future medical and hospital care of our people. All of this will no doubt add to the general good health of our people."

Dr. Edgar D. Shanks,
Secretary-Treasurer,
Medical Association of Georgia,
478 Peachtree Street N.E.,
Atlanta, Georgia.

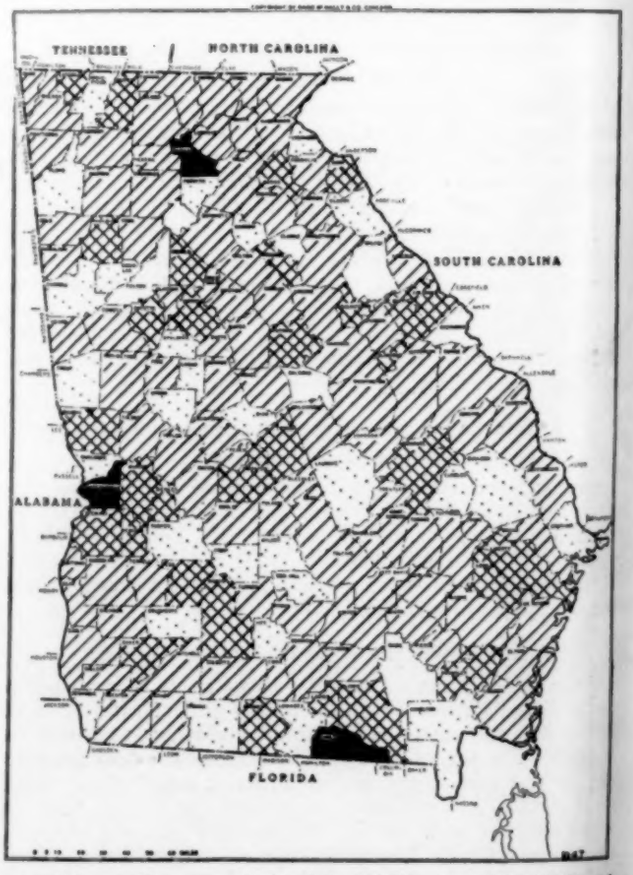
Areas in Georgia Requesting General Practitioners

County	Town	Population	County	Town	Population
Camden	Saint Marys	733	Paulding	Dallas	1,922
Crawford	Roberta	535	Union	Blairsville	358
Harris	Waverly Hall	569	Worth	Sylvester	2,191
Henry	Locust Grove	349	Wilcox		12,755

GEORGIA—1946



GEORGIA—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

ALABAMA

Areas in Alabama Requesting General Practitioners

County	Town	Population	County	Town	Population
Baldwin	Robertsdale	779	Butler		32,447
Barbour	Clayton	1,813		Georgiana	1,627
Bibb	West Blocton	1,317	Cherokee	Cedar Bluff	436
Blount	Oneonta	2,376		Center	1,013
Bullock	Midway	617	Chilton	Jemison	456
	Union Springs	3,107		Thorsby	772

Areas in Alabama Requesting General Practitioners—Continued

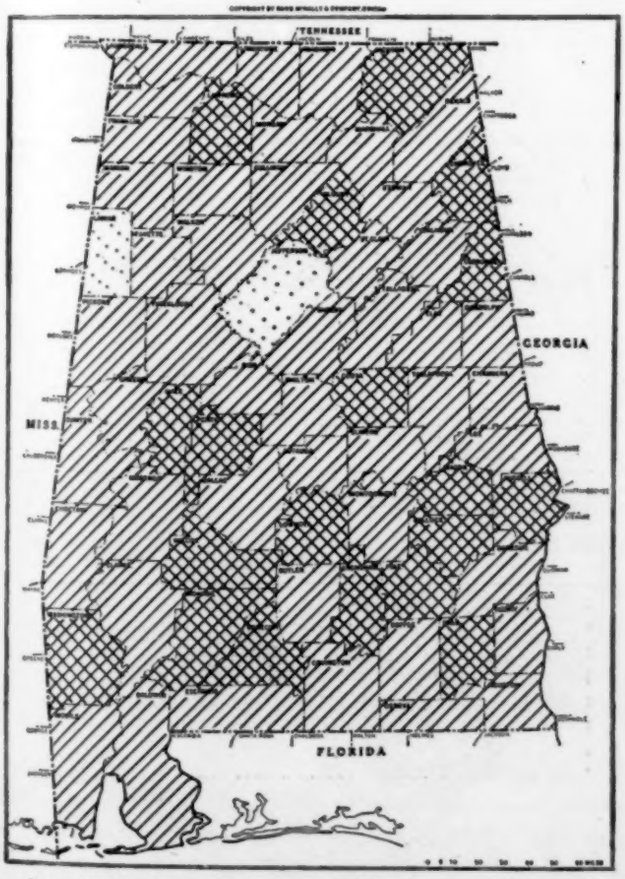
County	Town	Population
Clay	Lineville	1,300
Cleburne		13,629
	Fruithurse	281
	Heflin	1,684
Colbert	Cherokee	786
Conecuh	Castleberry	609
Coosa	Goodwater	1,028
	Rockford	394
Crenshaw	Highland Home	200
Dale	Ariton	561
	Midland City	647
Dallas	Pleasant Hill	200
DeKalb	Crossville	436
	Fyffe	100
Elmore		34,546
	Deatsville	210
	Titus	125
Escambie		30,671
Fayette	Fayette	2,068
Franklin	Vina	472
Geneva	Samson	2,182
Greene	Boligee	241
	Eutaw	1,895
Hale	Akron	504
Houston	Ashford	1,224
Jackson	Bridgeport	2,031
	Estillfork	106
Jefferson	Birmingham	267,583
Lamar		19,708

County	Town	Population
Lee	Waverly	321
Lowndes	Haynesville	525
	Lowndesboro	350
Macon		27,654
Madison	Gurley	581
Marengo		35,736
Marion	Guin	1,175
Mobile	Calvert	239
Mobile	Grand Bay	500
Montgomery	Ramer	500
Morgan	Falkville	507
Perry		26,610
Pickens	Alliceville	1,475
Pike	Banks	252
	Brundidge	1,909
Randolph	Wadley	493
	Wedowee	525
Russell		35,775
St. Clair	Asheville	385
	Ragland	1,070
Shelby	Calera	1,092
Sumter	Epes	328
Talladega	Munford	549
	Sylacauga	6,269
Tallapoosa		35,270
	Dadeville	2,025
Washington		16,188
	Chatom	823
Wilcox		26,279

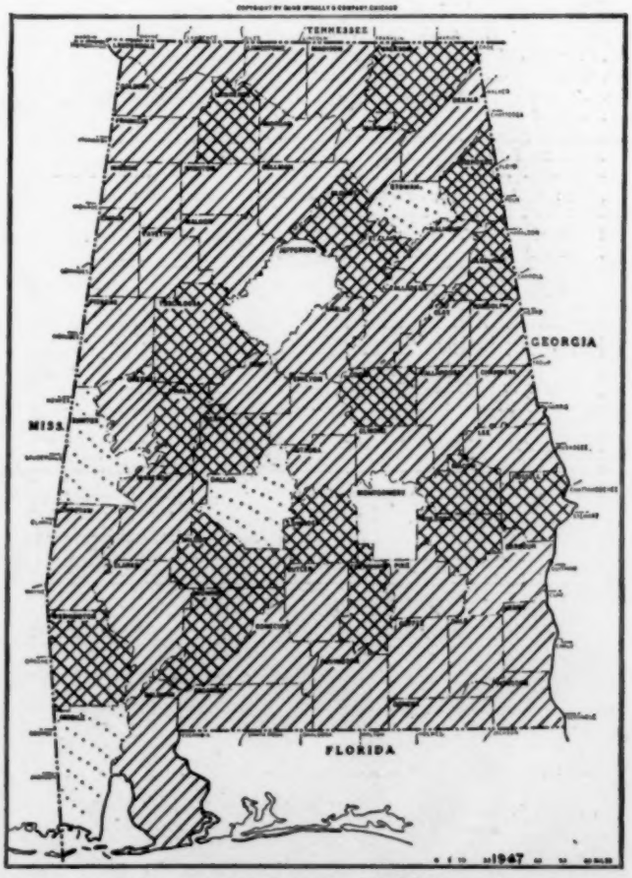
"Distribution of physicians is improving, although there yet remain areas in need of them. The largest centers of population have been fortunate in adding to their total of practitioners, and some of the smaller centers have been provided for also."

DR. DOUGLAS L. CANNON, Secretary,
The Medical Association of the State of Alabama,
519 Dexter Avenue, Montgomery.

ALABAMA—1946



ALABAMA—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

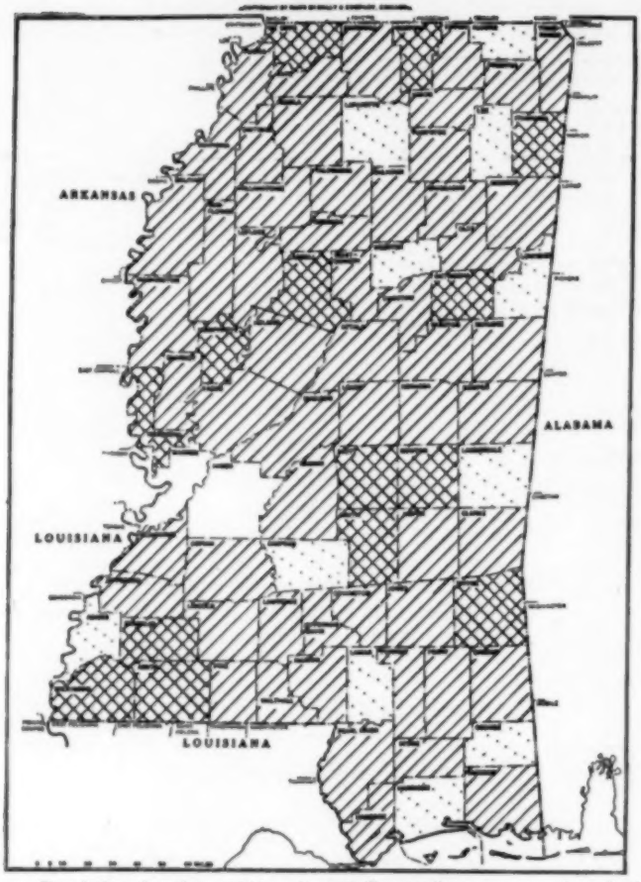
Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

MISSISSIPPI

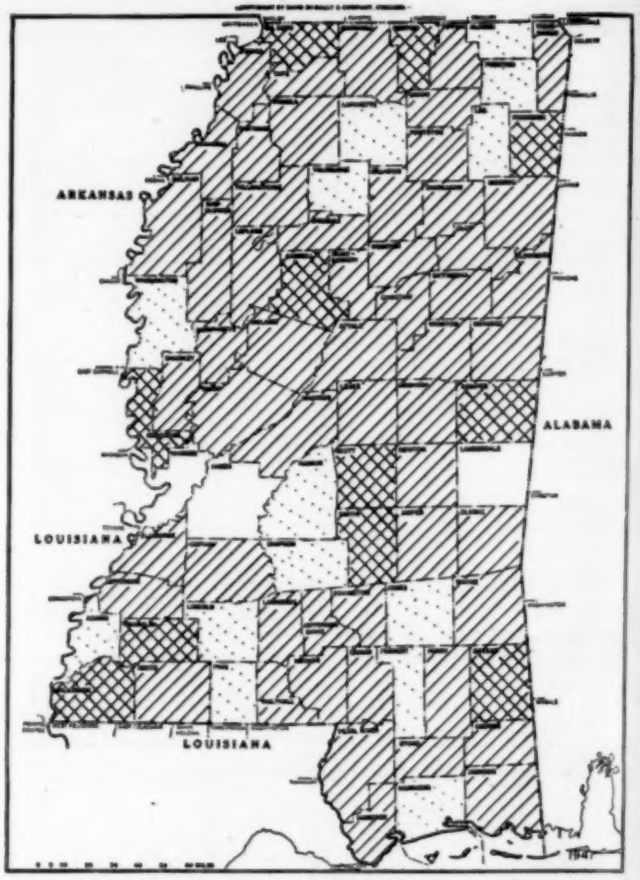
"The distribution of physicians throughout Mississippi has improved very markedly since V-J day. There are still a few rural places which need supplying, but the demand is not nearly as pressing as it was during war days."

DR. T. M. DYE, Secretary,
Mississippi State Medical Association,
Box 295, Clarksdale.

MISSISSIPPI—1946



MISSISSIPPI—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

Areas in Mississippi Requesting General Practitioners

County	Town	Population	County	Town	Population
Benton		10,429	Panola		34,421
Forrest	Petal	500	Prentiss		20,921
Hinds		107,273	Rankin		27,934
Itawamba		19,922	Simpson		22,024
Kemper		21,867	Tate		19,309
Lauderdale		58,247	Tippah		19,680
Marshall		25,522	Tishamingo		16,974
Monroe		37,648	Union		21,867
Noxubee		25,639	Webster		14,160
Oktibbeha		22,151	Winston		22,751

SOUTH CAROLINA

SOUTH CAROLINA—1946

SOUTH CAROLINA—1947

Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

"Generally speaking, South Carolina is probably as well off for physicians as she was before the war. Most of the larger communities appear to be cared for fairly satisfactorily. There is still a need in the rural areas in South Carolina, as in other states, for more physicians. A surprising number of men coming back from the services are going into general practice. Our greatest need at the present time is for more physicians for rural areas and for the colored population."

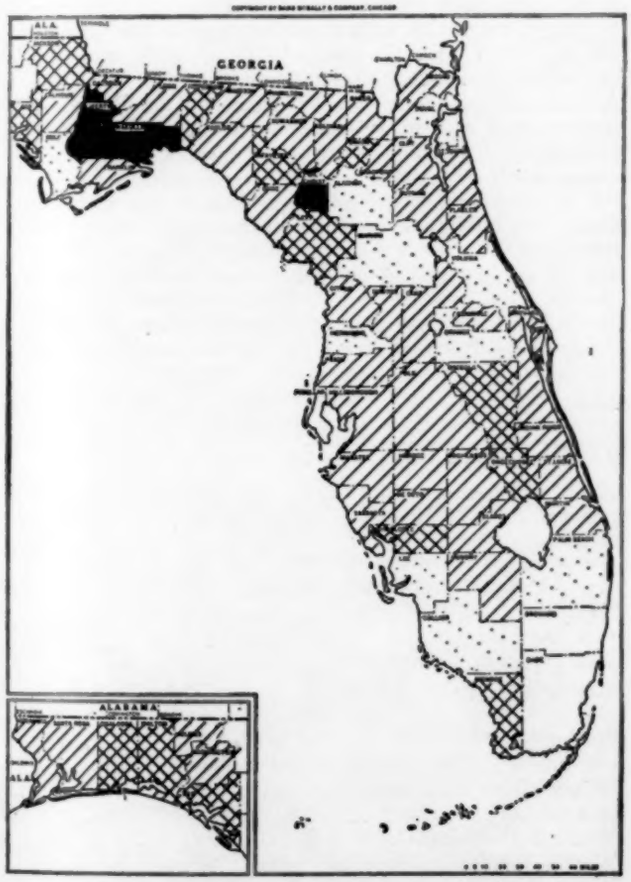
JULIAN P. PRICE, M.D., Secretary,
South Carolina Medical Association,
Florence, S. C.

Areas in South Carolina Requesting General Practitioners

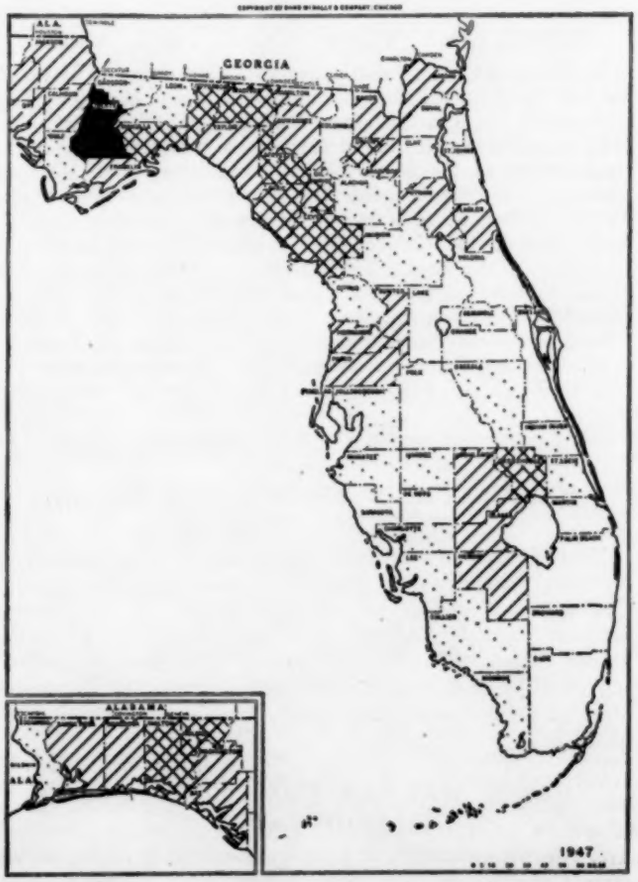
County	Town	Population	County	Town	Population
Aiken		6,168	Greenwood		13,020
Calhoun		16,229	Johnston		1,100
Dorchester		19,928	Lee		24,908
Edgefield		2,119	Spartanburg		127,733

FLORIDA

FLORIDA—1946



FLORIDA—1947



Population, based on 1943 estimated Census figures, per active physician (excludes teaching, research, hospital administration, public health and state hospitals) by county.

Key: Physician-population ratio by county: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over, solid black area no doctor.

Areas in Florida Requesting General Practitioners

County	Town	Population	County	Town	Population
Baker		6,510	Okeechobee		3,000
Columbia		16,859	Osceola		10,119
Gadsden		31,450	Pasco		13,981
Hamilton		9,778	Pinellas	Gulfport	1,581
Jackson	Round Lake	150	Polk		86,635
Lake	Umatilla	1,149	Seminole		22,304
Liberty		3,752	Wakulla		5,463
Martin		6,295		Crawfordsville	500
			Walton	DeFuniak Springs	2,570

STEWART G. THOMPSON, D. P. H., Managing Director,
Florida Medical Association,
P. O. Box 1018, Jacksonville 1.

GOVERNMENT SERVICES

NAVY

NEW NAVAL HOSPITAL

The cornerstone of the new U. S. Naval Hospital under construction near Beaufort, S. C., was laid with appropriate ceremonies to which the public was invited July 18. In attendance were a number of Congressmen who flew from Washington, also Rear Admirals L. T. DuBose, Commandant, Sixth Naval District, C. A. Swanson, Surgeon General of the Navy, and J. J. Manning, chief, Bureau of Yards and Docks, and Major General Franklin A. Hart, commanding general, Marine Corps Recruit Depot, Parris Island, S. C., also some state senators and representatives and mayors of nearby cities. During the ceremony Admiral Swanson placed papers in the cornerstone dating back to 1863 and comprising the first request for a naval hospital to be built in this area.

PHYSICIANS VISIT NAVAL AIR BASE

To gain first hand knowledge of the operation of a naval air base a group of physicians departed from Glenview, Ill., and certain points in Michigan on a Marine Corps air transport landing at Pensacola, Fla., in July, where they toured the naval headquarters as the guests of the commander, Capt. William Sinton. The party boarded the aircraft carrier *Wright*, Capt. W. K. Berner, U. S. Navy, in command, to spend two nights and a day in the Gulf of Mexico and take part in certain activities of the ship. The party comprised Rear Admiral F. L. Conklin (MC), U.S.N., of the Ninth Naval District, Drs. John B. Youmans, dean, University of Illinois Medical School, and Granville A. Bennett, Chicago; Dr. A. C. Furstenberg, dean, and Bradley Patten, Ph.D., University of Michigan Medical School; Drs. Warren E. Forsythe, director, University of Michigan Health Service, and Charles S. Kennedy, member of the board of regents, University of Michigan; Drs. Carey P. McCord, medical director for the Chrysler Corporation, Grover C. Penberthy and Archibald D. McAlpine, all of Detroit; Dr. Joseph J. Furlong of Marquette University Medical School, Milwaukee, and Michael A. Gorman, Flint, Mich.

NAVY AWARDS AND COMMENDATIONS

Commander Sam A. Bassett

The Bronze Star Medal has been awarded to former Commander Sam A. Bassett (MC), U.S.N.R., now in civilian practice in St. Louis. The citation read as follows: "For meritorious service in connection with operations against the enemy during the period Sept. 12, 1944 to April 28, 1945, while serving as medical officer of an escort carrier. During this period he participated in five major amphibious operations. His resourcefulness, great skill in administering to the wounded, coolness, gallantry and devotion in the prosecution of his duties when under attack by enemy dive bombers, torpedo planes, suicide bombers and an overwhelmingly superior surface force were a tremendous inspiration to officers and men alike. He contributed materially to the success of these operations against the enemy, and his performance of duty was at all times of outstanding efficiency and in keeping with highest traditions of the naval service." Dr. Bassett graduated from Washington University School of Medicine, St. Louis, in 1931 and entered the military service in 1940.

VETERANS ADMINISTRATION

MEDICAL AND PSYCHIATRIC SOCIAL WORKERS NEEDED

Vacancies exist for medical and psychiatric social workers in Veterans Administration installations throughout the country. Qualified social workers may file application in Veterans Administration hospitals, regional offices and clinics throughout the United States. Civil Service commission information regarding these positions may be obtained from any first or second class post office also. The salaries range from $3,397.20 to $8,179.50.

NURSES WANTED FOR TUBERCULOSIS HOSPITALS

The Veterans Administration is endeavoring to recruit nurses for assignments to tuberculosis hospitals. A training center has been established at Oteen, N. C., for graduate and senior cadet nurses, where particular emphasis is placed on protective measures to prevent as far as possible the dissemination of tubercle bacilli. Nurses wishing to specialize in this kind of work or any other clinical field may earn salaries equivalent to those heretofore available only in the field of nursing administration. The salaries range from $2,644 to $6,000. Applications should be submitted to the VA branch office having jurisdiction over the territory where the nurse desires to work.

TRAVELING MENTAL CLINIC

In order to provide more adequate patient care and follow-up care, and to effect a more rapid turnover of hospital beds, the neuropsychiatric division of the Veterans Administration is developing a pilot traveling mental hygiene clinic which will operate from the Veterans Administration hospital at Lyons, N. J. The clinic will function administratively under the regional office, with the hospital supplying the professional personnel.

PERSONAL

Dr. Joseph A. McMullin, San Diego, Calif., rear admiral, U. S. Navy, retired, has been appointed chief medical officer of the Michigan veterans facilities, Grand Rapids. Dr. McMullin, a graduate of Jefferson Medical College, Philadelphia, served many years in the medical corps of the navy. He was in charge of the naval hospital at Pearl Harbor prior to the war and a former member of the faculty of medicine of the University of the Philippines. Dr. Edmund Quirk of Detroit also has been appointed a member of the staff of the Michigan Veterans Facilities, Grand Rapids. Dr. Quirk, a graduate of Wayne University Medical School, served abroad during World War II and since returning to civilian life has been on the staff of the Detroit Receiving Hospital.

Dr. George L. Johnson, formerly manager of the Veterans Administration hospital at Tuscaloosa, Ala., and recently on the staff of the Veterans Administration hospital at Thomasville, Ga., has been appointed chief medical officer of the Alabama regional office, succeeding Dr. Harley B. Fisk, who goes to the Miami, Fla., office as chief regional medical officer. Dr. Johnson is a veteran of both world wars and has been with the Veterans Administration since 1919.

Dr. Jerome Karmiol, chief medical officer in the regional office, Miami, Fla., has resigned to enter private practice. Dr. Karmiol, who is said to have organized the Veterans Administration regional medical clinic in Miami, will continue to serve as a part time member of the clinic staff.

Dr. Francis J. Phillips has resigned as superintendent of the Morgan Heights Sanatorium, Marquette, Mich., to accept the position as surgical chief of the 1,000 bed veterans' hospital in Temple, Texas. Dr. Phillips served in Europe with the Army in the recent war as a flight surgeon.

PUBLIC HEALTH SERVICE

CANCER CONTROL PROGRAM EXPANDED

The U. S. Public Health Service has expanded its program for cancer control. In the fiscal year which began July 1 funds to the extent of $2,500,000 will be allotted for this purpose to state health agencies, according to the following formula, which is similar to the one used last year: 30 per cent on population, 30 per cent on financial need, 35 per cent on cancer mortality and 5 per cent on population density. Using this formula as a basis, the total allotment for the state of Alabama, for example, for the fiscal year for cancer grants in aid is $60,529, and for the state of New York $209,602. Payments to the states will be made quarterly. Up to 15 per cent of the funds may be used to cover the cost of administration of the general health program and services not directly identified as cancer, when such services support the cancer control program. If any state requires more than 15 per cent for this purpose and can justify such requirement in writing, exceptions may be made. The Surgeon General will report from time to time to the National Advisory Cancer Council on the progress of the program.

Up to $1,000,000 available for cancer control will be used to support special cancer programs, and official state agencies may qualify for funds in the special project program. Medical schools, hospitals and other health agencies may also receive grants. Such plans and requests under the special projects program must be submitted through state health departments. The special projects fund will be expended mainly for post-graduate training of clinicians, surgeons, pathologists, radiologists and others specializing in cancer work, for short term training courses for general practitioners and for coordinated and concentrated teaching of cancer in medical and dental schools.

Every effort will be made to cooperate with the American Cancer Society and with the various national professional societies with substantial interest in the cancer problem, and the Public Health Service will encourage state health agencies to cooperate with similar bodies in the development of programs at their level.

THE NATIONAL MENTAL HEALTH PROGRAM

The national mental health program authorized by Congress in 1946 was implemented on July 8 by an appropriation of seven and a half million dolars. The Surgeon General, U. S. Public Health Service, has announced that the program calls for activity in three major fields: (1) increased research into problems of mental health, (2) increased training of urgently needed personnel and (3) increased support and stimulation of state efforts to develop adequate mental health programs.

About $400,000 will be spent during the present fiscal year for research by providing grants-in-aid to universities, hospitals, laboratories and other public and private institutions and to qualified individuals. With these grants, twenty-five research projects will be conducted in biochemistry, neurophysiology, delinquency, child psychology, alcoholism, psychosomatic medicine, psychotherapy and shock therapy. The fund also provides research fellowships in fields related to mental health, of which fourteen have been awarded.

Over a million dollars will be spent for grants to public and other nonprofit institutions for the development and improvement of facilities for training mental health personnel. The grants include seventeen in psychiatry, sixteen in clinical psychology, nine in psychiatric social work and nine in psychiatric nursing. This fund will also provide for training stipends for seventy graduate students in psychiatry, forty-one in clinical psychology, forty in social work and fifty-eight in psychiatric nursing.

A sum of $3,000,000 is appropriated for grants-in-aid to states for local mental health programs. The goal of the Public Health Service in the grants to states program is the establishment by the states program of one outpatient mental health clinic for each hundred thousand of the population and the provision of services to sparsely settled and rural areas through traveling clinics. State programs and budgets are now being received and grants are being allocated as soon as the plans are reviewed and approved. In addition, it is planned to establish demonstration clinics operated by the Public Health Service, and inservice training programs and training institutes for general practitioners in several states. Personnel will be lent to the states on request to aid local programs.

The remainder of the funds appropriated will be used for field studies in mental hygiene and the operation of the two U. S. Public Health Service hospitals for drug addicts and the mentally ill at Lexington, Ky., and Fort Worth, Texas.

NATIONWIDE INVENTORY OF SANITATION NEEDS

The Sanitary Engineering Division of the U. S. Public Health Service has completed an inventory of sanitation needs throughout the country. Among the estimates made as a result of the inventory is that more than a hundred million people of our cities need improved water supply and disposal facilities, and that it would cost $7,834,581,000 to provide them. This is said to be the minimum which should be spent to reduce the incidence or potential incidence of such diseases as dysentery, diarrhea and typhoid. This inventory, the Public Health Service states, the most complete inventory of basic sanitation needs ever compiled for the nation, was made with the cooperation of health departments of every state and hundreds of county and city health departments. "The cost of obtaining the healthy environment essential to a national health program" is itemized state by state. Almost 40 per cent of the needed construction is now at least at the planning stage, according to the survey. More than 9 per cent of the needed sewerage facilities costing about $360,509,000 is ready for construction; an additional 24 per cent costing $908,048,000 is definitely planned. Almost 17 per cent of the needed water supply systems costing $381,829,000 is ready for immediate construction, and plans are in progress for an additional 27 per cent costing $612,111,000.

In towns of less than 1,000 population the needs exceed $100 per capita, while in cities of more than 100,000 population the needs exceed $80 per capita. In towns of intermediate size the cost is about $50 and in rural areas $40. The cost estimates take into account variations in economic status and in practices and policies of local communities.

FEDERAL AID FOR CONSTRUCTING MEDICAL FACILITIES

The construction of millions of dollars' worth of hospital and health facilities during the fiscal year 1948 will be possible under the appropriations act signed by the President on July 8, Thomas Parran, Surgeon General, U. S. Public Health Service, announced. Although no federal funds were directly appropriated, the act sets up a procedure which obligates the federal government to pay up to $75,000,000 as its share of approved hospital construction, bringing the potential combined total of federal, state and local funds to $225,000,000. States need not delay their hospital construction plans, since they now have assurance that any construction project approved by the Surgeon General creates a contractual obligation on the part of the federal government to meet its one-third share of the cost.

This legislation implements the construction phase of the Hospital Survey and Construction Act passed by Congress last year, authorizing the appropriation of 3 million dollars for survey and planning and 75 million dollars for construction annually for five years. Two and a quarter million dollars was appropriated last year to assist the states in surveying existing hospital facilities. The 75 million dollars just appropriated for the fiscal year 1948 is the first money to be made available for construction. Funds may be used for health centers, laboratories, clinics and other medical facilities, as well as for hospitals.

All states and territories, including the District of Columbia, are conducting inventories of their hospitals and health facilities. So far construction plans of Indiana, Mississippi and North Carolina have been approved, and it is expected that more than half of the states will have submitted their plans by fall.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Arkansas

Carson, Layne E.....Augusta
Doane, Samuel N. Jr.....Arkadelphia
Jackson, Robert H.....Little Rock
Shuffield, Horace E.....Little Rock
Walsh, William V.....North Little Rock

California

Ashcraft, Granville P.....Los Angeles
Bennett, Crayton J.....Oakland
Dickmann, Richard C.....Glendale
Engel, Rodger R.....Santa Ana
Lange, Otto H.....Los Angeles
Pierce, Richard K.....San Francisco
Thomas, Bert S.....Sacramento
Walters, John D.....Los Angeles

Colorado

Hardy, Arthur B.....Denver
Miller, Alvin P.....Denver
Saliba, Nicholas S.....Walsenburg
Stumm, Philip W.....Denver
Vest, Maurice D.....Denver
Wahl, David L.....Denver
Zarlengo, Roland J.....Denver

District of Columbia

Dibbs, Alfred.....Washington
Kriegman, George.....Washington
Steinberg, Stanley H.....Washington
Stretch, Clarence L.....Washington
Treccase, Joseph P.....Washington

Georgia

Blumberg, Richard W.....Canton
Burdine, James M.....Marble Hill
Hendrix, John W.....Cartersville
Hiatt, Wilks O. Jr.....Savannah
Mitchell, Frank B. Jr.....Milledgeville
Mixson, Joyce F. Jr.....Valdosta
Mooney, Alfonso J. Jr.....Statesboro
Morgan, James C. Jr.....West Point

Illinois

Allers, William D.....Chicago
Aten, William G. Jr.....Chicago
Braun, Lester E.....Chicago
Cole, Irwin.....Chicago
Dierker, Leroy J.....Neuvoc
Feldman, Harold.....Pekin
Harned, John W.....Chicago
Jacobs, Howard M.....Chicago
Kaufman, Irving.....Chicago
Rypins, Edwin I.....Bloomington
Scanlon, Thomas B. Jr.....Decatur
Weiss, Harold R.....Chicago

Indiana

Harding, Myron R.....Indianapolis
Hardy, Lester L.....Lexington
Johnston, Donald D.....Fort Wayne
Kimbrough, Robert F.....Logansport
McDowell, Fletcher W.....Muncie
Schechter, John S.....Indianapolis
Walsh, Thomas P.....Garrett

Kansas

Beahm, Edgar H.....Kansas City
Holt, James H.....Wichita
Mitchell, Duane H.....Winchester
Richardson, Marion W.....Kansas City

Kentucky

Dade, James R.....Hopkinsville
Dickinson, John.....Glasgow
Metheny, Ralph S.....Louisville
Simpson, Paul W.....Nicholasville
Smiley, Gordon L.....St. Matthews

Louisiana

Dileo, Joseph L.....New Orleans
Leonard, Alan J.....New Orleans
McDaniel, Edwin B.....New Orleans

Maryland

Baylus, Meyer M.....Baltimore
Goldstein, Marvin.....Baltimore
Moody, Louis H. Jr.....Coral Hills
Saylor, Lloyd E.....Baltimore

Massachusetts

Blumenfeld, Irving H.....Springfield
Boral, Henry.....Worcester
Lourie, Joseph R.....Newton
Miller, John F.....Newton
Sabbagh, Joseph N.....Methuen
Walker, Donald A.....Worcester

Michigan

Dawson, Ralph E. J.....Blanchard
Hoogerland, Clarence L.....Grand Rapids
Montante, Joseph R.....Detroit
Nell, Edward R.....Kalamazoo
Van Hoek, Donald E.....Ann Arbor

Minnesota

Golden, Peter B.....Rochester
Hayes, Albert F.....St. Paul
Neuenschwander, Harold L.....St. Paul
Swisher, Scott N. Jr.....Bayport
Van Cleve, Horatio P.....Minneapolis

Nebraska

Anderson, Milton H. Jr.....Omaha
Ekart, Paul I.....Wymore
Harrington, Albert E.....Hastings
Lavender, John G.....Lincoln
Rasmussen, John A.....Omaha

New Jersey

Cohen, Sidney J.....Bayonne
Devlin, Arthur D.....Newark
Franklin, Richard L.....Jersey City
Heenahan, Thomas A.....Union City
Rath, Charles K. Jr.....Elizabeth
Wade, George R.....Madison

New York

Benjamin, Martell.....Brooklyn
Binckley, John W.....Rochester
Bodansky, Oscar.....New York
Carey, Donald M.....New York
Carofiglio, Louis.....St. Albans, L. I.
Craft, Girard J.....New York
Day, Richard G. Jr.....Schenectady
Dolgow, Joseph.....Brooklyn
Donnelly, Walter G.....Brooklyn
Frick, Henry C.....Roslyn, L. I.
Glidden, Sawyer A.....Holley
Josephson, Arthur D.....Spring Valley
Kalter, Henry H.....Long Beach
Larkin, Edward A.....Amenia
Lipschik, Emanuel.....Brooklyn
Lothringer, Harvey N.....Flushing
Miller, Melvyn R.....Elmhurst, L. I.
Nowill, William K.....Elmira
O'Hern, John A.....Hartsdale
Rogers, James A.....Rockville Centre
Ryan, Albert R.....New York
Saab, Joseph Richard.....Lackawanna
Sacca, Joseph D.....Brooklyn
Shreve, Robert W.....New York
Siegel, Alan V.....Yonkers
Toye, Joseph J.....Brooklyn
Tracy, Edward M.....Lackawanna
Vamvas, George S.....Brooklyn
Walker, Roland J.....Auburn
Wanderman, Sidney E.....New York

Ohio

Alt, Louis P.....Cincinnati
Cultrone, Frank T.....Cleveland
Dorner, Arthur F.....Akron
McCammon, Floyd A.....Van Wert
Schwab, Louis.....Cincinnati
Vecchio, Frank.....Cleveland
Williams, Robert F.....Cleveland

Oregon

Breese, Melvin W.....Portland
Brown, Merle F.....Independence
Cooke, Donovan O.....Clatskanie
Hunt, Calvin L.....Klamath Falls
MacDonald, Donald C.....Scio
Neikes, Robert D.....Portland

Pennsylvania

Allen, Robert W.....Reading
Bullard, Arch H.....West Alexander
Cramer, Harry R.....Mifflin
Derham, Robert J.....Philadelphia
Dickinson, Robert J.....DuBois
Grieco, Victor F.....Williamsport
Haberman, William B.....Weissport
Hamilton, Lorin D.....Philadelphia
Kron, Samuel D.....Philadelphia
Leslie, Warren D.....Masontown
Lipschutz, Arthur.....Philadelphia
Nye, Robert B.....Philadelphia
Rodham, Russell D.....Scranton
Rosenzweig, Max.....Philadelphia
Samolis, Joseph G.....Pottsville
Wallace, Robert W.....Pittsburgh

Rhode Island

Chiffelle, Thomas L.....Slatersville
DiMaio, Michael.....Providence
Moore, Marlin C.....Cranston
Moran, James B.....Providence

Tennessee

Brinkley, Joseph W.....Memphis
Buttram, William R.....Chattanooga
Conditt, Abraham K. Jr.....Nashville
Eddins, Elmer S.....Memphis
Elrod, Parker D.....Nashville
Foster, James R.....Memphis
Haralson, Robert H. Jr.....Maryville
Jacob, William S.....Knoxville
Lipscomb, Albert B.....Nashville
Pedigo, Howard K.....Memphis
Sanders, Dan S. Jr.....Nashville
Stoltz, Charles R.....Oak Ridge

Texas

Browne, Charles F.....Lubbock
Butler, Donald B.....Houston
Crow, Howard G.....Waco
De Ware, Jesse M.....Jefferson
Henry, Colvern D.....San Antonio
Jacobson, Merlin E.....Amarillo
Lowe, Percy E.....Houston
Matthis, Austin W.....Darrouzett
Moody, Irving W.....Galveston
Ross, Nealie E. Jr.....Fort Worth
Salter, John J.....San Antonio
Shannon, Arthur W. Jr.....Houston
Simmang, Arthur V.....San Antonio
Walker, Horace G.....Midland
Walthall, Walter.....San Antonio
Zink, Linus A.....Pecos

Vermont

Ryan, William A.....Rutland
Swift, Charles C.....Rutland
Zanconato, Guerrino J.....Winooski

Washington

Boyer, William F.....Fort Lewis
Kittredge, George S.....Seattle
McConnell, Graham S.....Pullman

Wisconsin

Alleman, Russell J.....Wauwatosa
Barker, Donald E.....Chippewa Falls
Bradley, David J.....Madison
Hanson, Emmet R.....Milwaukee
Mrkvicka, Ernest L. Jr.....Racine
Smith, Robb.....Ashland
Snartemo, Reuben J.....Milwaukee
Wagner, Alphonse J.....Brillion

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARIZONA

Harlow Brooks Clinical Conference.—The eighth Harlow Brooks Memorial Navajo Clinical Conference will be held at Sage Memorial Hospital, Ganado, August 25-27. The scientific program will include discussions of numerous medical topics by speakers from various states.

CONNECTICUT

Dr. Thoms Appointed Head of Department.—Dr. Herbert Thoms, associate professor of obstetrics and gynecology, Yale University School of Medicine, has been appointed professor and chairman of the department. Dr. Thoms graduated from Yale University Medical School in 1910 and studied at Johns Hopkins Hospital, 1914-1915. He became an assistant in obstetrics and gynecology in 1915, an assistant in pathology, 1916-1917, and an associate clinical professor of obstetrics and gynecology 1925-1927, when he became associate professor. He has also served as curator of the Yale Medical Memorabilia and has been an associate in obstetrics and gynecology at Grace-New Haven Community Hospital University service.

Society Honors Fifty Year Practitioners.—A dinner in honor of six members of the local medical society who had completed fifty or more years in the practice of medicine was held May 28 in Danbury. The physicians were presented with commemorative bronze medals inscribed with the caduceus, the name of the Danbury Medical Society and, on the reverse side, the name and number of years of practice of each individual. The doctors so honored were William T. Bronson, William F. Gordon and the late Howard D. Moore, all of Danbury, Homer F. Moore, Bethel, Paul U. Sunderland and Frederic W. Wersebe, Washington. Dr. James R. Miller, Hartford, president of the Connecticut State Medical Society, attended the dinner.

FLORIDA

Personal.—Dr. J. Randolph Perdue, Miami, has been elected president of the South Atlantic Association of Obstetrics and Gynecology. The territory covered by this association includes Virginia, North Carolina, South Carolina, Georgia and Florida.

Short Course for General Practitioners.—About 100 physicians attended the fifteenth annual graduate short course designed especially for Florida's general practitioners in Jacksonville, June 23-28. The course was presented by the Department of Medicine of the University of Florida Graduate School in cooperation with the Florida Medical Association and the Florida State Board of Health. Among the physicians addressing the group were professors from Vanderbilt University School of Medicine, Nashville, Tenn.; Tulane University of Louisiana School of Medicine, New Orleans; Duke University School of Medicine, Durham, N. C.; Johns Hopkins University School of Medicine, Baltimore, and members of the U. S. Public Health Service.

ILLINOIS

Health Officer Appointed.—Dr. Dale E. Scholz, formerly of the Middletown, Conn., Health Department, has been appointed director of public health of the new Wabash-Lawrence Health Department. Dr. Scholz received his medical degree from the University of Rochester School of Medicine, Rochester, N. Y., and his public health degree from Columbia University College of Physicians and Surgeons, New York.

Celebrate Centennial of State Hospital.—The state hospital at Jacksonville celebrated on July 27 the one hundredth anniversary of its establishment as the first institution in Illinois for the care of the mentally ill. State officials and representatives of veterans' organizations participated in the program. Richard W. Rowe, state treasurer, representing Governor Green, spoke on "Illinois—the Humanitarian," and Dr. Winfred Overholser, Washington, D. C., president of the American Psychiatric Association, discussed "Jacksonville, 1847—Psychiatry Then and Now." Beginning as an institution that cared for 138 patients, today it has a resident patient population of 3,084.

Chicago

Appoint Toxicologist.—Dr. Carl C. Pfeiffer, head of the department of pharmacology, University of Illinois College of Medicine, Chicago, will serve as toxicologist of Cook County until further notice, Coroner Albert L. Brodie announced July 14, succeeding Dr. William D. McNally. Dr. Pfeiffer, it is said, will receive $1 a year. The Cook County arrangement with Dr. Pfeiffer is expected to be the forerunner of a state laboratory available to all Illinois coroners.

Society Extends Postgraduate Courses.—The Chicago Medical Society will sponsor two postgraduate courses to be held in Thorne Hall on the Northwestern University Campus this fall. A course on cardiovascular diseases will be given October 20-25 and one on gastroenterology October 27 to November 1, with authorities from Chicago and various parts of the United States teaching. Enrolment is limited to 100. Applications may be sent to the office of the Chicago Medical Society at once, accompanied with the fee of $50 for each course.

Open Treatment Center for Alcoholic Addicts.—The Chicago Welfare Department opened Portal House, 5059 Vincennes Avenue, June 28, to alcoholic addicts in the city's welfare department to rehabilitate persons on relief who are unable to hold jobs because of addiction to alcohol. Portal House will have a full scale rehabilitation program providing medical care and group and occupational therapy. Treatment will be for four weeks, with a one year follow-up of the patient's progress. Doctors from the University of Illinois and the Illinois Neuropsychiatric Institute staff the wards. Members of Alcoholics Anonymous are cooperating on the program.

Dr. Coggeshall Appointed Dean.—Dr. Lowell T. Coggeshall, Chicago, professor and chairman of the department of medicine at the University of Chicago Medical School, has been appointed dean of the division of biologic sciences at the university, succeeding R. Wendell Harrison, Ph.D., who has been appointed vice president of the university. The division includes the school of medicine. A graduate of Indiana University School of Medicine in 1928, Dr. Coggeshall served as assistant professor of medicine at the University of Chicago Hospital, 1928-1935. For the next five years he was a member of the staff for research on tropical diseases, International Health Division of the Rockefeller Foundation in New York. In 1940 he went to the University of Michigan as a professor of preventive medicine in the School of Public Health and in 1942 became chairman of the department of tropical diseases there. He was commissioned lieutenant commander in the United States Naval Reserve in January 1944 and was promoted to commander in March of that year.

Smallpox Vaccination.—The board of health, after learning that a waiter had come down with smallpox soon after leaving Chicago, set up four vaccination centers in the area of the waiter's residence July 25 and quarantined possible sources of infection. The vaccination of residents of the square mile area of contact will continue for sixteen days. The health department assigned twenty-five doctors and nurses to work with the ambulances and three public clinics. Dr. Herman N. Bundesen, president, Chicago Board of Health, closed the commissary when he learned that the waiter had loaded food onto a train and ordered fifty commissary employees vaccinated immediately. He advised that the commissary of the Fred Harvey System supplying materials to the Santa Fe railroad is under quarantine with fifteen of its employees. The patient, who had prodromal symptoms for three days previous to leaving Chicago, was taken from the train at Clovis, N. M., when he became ill. Los Angeles health authorities boarded the Santa Fe train at San Bernardino to vaccinate the 138 passengers and crew members or place them under fourteen day quarantine. This patient had never been vaccinated.

INDIANA

Special Automobile License Plates.—The director of the state bureau of motor vehicles, H. Dale Brown, has announced that special license plates will be issued to Indiana physicians next year. The plates will carry the initials M.D. and will be numbered 1 to 4000. According to Mr. Brown, they are intended to expedite the work of physicians en route to emergency cases.

New Board of Health Building.—Plans for a new state board of health building have been approved by the state board health. The four story structure will contain a laboratory, office space and facilities to carry out the state public health program. There will be an auditorium with 136 seats and additional space for temporary seats and exhibits. The present quarters of the board of health will be turned over to Indiana University for laboratories and administrative offices.

LOUISIANA

Head of Preventive Medicine Department.—Dr. Robert L. Simmons, Meridian, Miss., became head of the department of preventive medicine and public health at Louisiana State University School of Medicine, New Orleans, August 1. Dr. Simmons, a graduate in public health of Louisiana State University School of Medicine, 1937, has been director of the Lauderdale County Health Department in Mississippi.

New Orleans-Metairie Hospital Foundation.—The Metairie Hospital and the New Orleans-Metairie Hospital Foundation have opened a one story brick building in central Metairie to provide medical and hospital care for certain indigent cases that are recommended by the civic, church and other groups in Metairie. Facilities are available to all qualified licensed physicians in Louisiana. In addition to the regular hospital staff, there will be an open staff membership. The facilities comprise emergency and operating rooms, delivery room, x-ray and fluoroscopic equipment, laboratory and pharmacy. There are 22 semiprivate beds and 8 bassinets. The director of the hospital is Dr. William K. Gauthier. The New Orleans-Metairie Hospital Foundation was organized by a group of business and professional men for the purpose of providing hospital facilities in this area.

MASSACHUSETTS

Discontinue Distribution of Toxin-Antitoxin.—The public health council of the commonwealth of Massachusetts discontinued the distribution of toxin-antitoxin on June 30 in accordance with recommendations of the National Institute of Health and authorities on diphtheria immunization. The opinion was that toxin-antitoxin mixtures should be entirely replaced by diphtheria toxoid for diphtheria immunization.

Woman Chemist to Receive Medal.—Mary L. Sherrill, Ph.D., head of the department of chemistry, Mount Holyoke College, South Hadley, will receive the Francis P. Garvan medal honoring women in chemistry at the national meeting of the American Chemical Society in New York, September 15-19. During the war Dr. Sherrill conducted investigations of antimalarial compounds at Mount Holyoke for the government. The Garvan medal was established in 1938 after the death of Mr. Garvan, philanthropist and lawyer, noted for his contributions for the advancement of chemistry.

MICHIGAN

State Medical Meeting.—The eighty-second annual session of the Michigan State Medical Society will be held at the Pantlind Hotel, Grand Rapids, September 23-26, under the presidency of Dr. William A. Hyland, Grand Rapids. Seven general assemblies, twelve section meetings and twenty-three discussion conferences are on the program. The out of state speakers include:

Allen O. Whipple, New York, Early Diagnosis of Pancreatic and Ampullary Growths, with an Evaluation of Surgical Therapy.
Andrew C. Ivy, Chicago, Diagnosis of Jaundice from a Therapeutic Point of View.
Wendell G. Scott, St. Louis, Investigation of Low Back Pain by Radiographic Methods.
Louis Schwartz, Washington, D. C., Diagnosis, Prevention and Treatment of Occupational Dermatitis.
Clifford B. Lull, Philadelphia, Changes and Improvements in Obstetric Practice During the Past Twenty-Five Years.
Frederic E. B. Foley, St. Paul, The Part of the General Practitioner in the Management of Vesical Neck Obstruction.
Harry Gold, New York, Management of the Failing Heart.
Russell L. Cecil, New York, Chronic Arthritis.
George M. Curtis, Columbus, Ohio, Surgery of the Spleen.
Alex D. Campbell, Montreal, Certain Aspects of Vaginal Surgery.
John R. Lindsay, Chicago, Vertigo: Differential Diagnosis and Treatment.
Ralph V. Platou, New Orleans, The Tuberculous Child.
Reynold A. Jensen, Minneapolis, The Doctor and the Child.
Claude F. Dixon, Rochester, Minn., Carcinoma of the Colon and Its Management.
Robert H. Williams, Boston, Comparison of Clinical and Physical Methods of Treating Thyrotoxicosis.
Cecil S. O'Brien, Iowa City, Senile Cataract from the Standpoint of the General Practitioner.
Frank E. Whitacre, Memphis, Tenn., Diagnosis and Treatment of Ectopic Pregnancy.
Michael E. DeBakey, New Orleans, Therapeutic Application of Hemometacinesis in Peripheral Vascular Disturbances.
Paul A. O'Leary, Rochester, Minn., Penicillin in Treatment of Syphilis in General Practice.
L. Emmett Holt Jr., New York, Treatment of Infantile Diarrhea.
Russell L. Haden, Cleveland, Gout.
Joseph D. Aronson, Philadelphia, BCG Vaccine in the Control of Tuberculosis.
Stuart W. Harrington, Rochester, Minn., Cancer of Breast.
Clement A. Smith, Boston, Potentialities and Limitations of Prenatal Pediatrics.
Alan R. Moritz, Boston, Medical-Legal Pathology.
W. Wayne Babcock, Philadelphia, Closure of Abdominal Fistula.
Wallace E. Herrell, Rochester, Minn., Present Status of Sulfonamide and Antibiotic Therapy.

The Women's Auxiliary will present a social and business program at the time of the scientific sessions.

Annual Meeting of Society for Crippled Children.—The Michigan Society for Crippled Children and Adults, Inc., will hold its sixth annual meeting in Marquette, August 10-11. Among the speakers will be Dr. Meyer A. Perlstein, director of the therapeutic nursery in Michael Reese Hospital, Chicago, who will lecture on the medical aspects of cerebral palsy and hold a demonstration clinic; Dr. L. Fernald Foster, Bay City, who will lecture on the Michigan rheumatic fever and cardiac program, and Dr. Moses Cooperstock, Marquette, who will speak on rheumatic fever.

NEW JERSEY

Personal.—Dr. Edward Guion, Northfield, has retired as superintendent and medical director of the board of free holders of Atlantic County Hospital for Mental Diseases, and Atlantic County Hospital (Alms House). Dr. Guion, who was honored at testimonial dinners by both hospitals, will resume the private practice of psychiatry in Pleasantville and will retain his membership on the psychiatric staffs of the Atlantic City Hospital and Atlantic County Hospital for Tuberculous Diseases, Northfield.

Physicians' Post Organized.—Formation of a physicians' post (445) of the American Legion, limited to members of the medical profession and reported to be one of the few units in the country, will be established September 27. Membership is opened to any American physician regardless of creed, race or color who had active duty in the army, navy or public health service during either world war and who was honorably separated from the service. The temporary commander is Dr. Ulysses M. Frank, Newark.

NEW YORK

Appointed Health Officer.—Dr. Frank E. Coughlin, Troy, temporarily serving as Rensselaer County chief medical officer, has been named permanent county commissioner of health to serve six years, effective June 1. Dr. Coughlin since last November has been in charge of the organization of the county health bureau under which the health service of Troy, Rensselaer, Hoosick Falls and various communities in the county were merged into a single county health bureau. This bureau has served as a pattern for other New York State counties which have inaugurated similar programs. Dr. Coughlin served as state district health officer prior to his temporary appointment and had been granted a year's leave of absence to organize the county health bureau. He resigned from the state health department to assume his new duties.

Postgraduate Instruction.—The Council Committee of Public Health and Education of the Medical Society of the State of New York in cooperation with the New York State Department of Health has arranged the following postgraduate courses for the Orange County Medical Society at the court house in Goshen at 8:30 p. m.:

September 9: Dr. Paul Reznikoff, associate professor of clinical medicine, Cornell University Medical College, New York, "Diagnosis and Treatment of Anemia."
September 30: Dr. Kurt Lange, assistant clinical professor of medicine, New York Medical College, Flower and Fifth Avenue Hospitals, New York, "Peripheral Vascular Diseases."
November 11: Dr. Edward F. Hartung, assistant clinical professor of medicine, Columbia University College of Physicians and Surgeons, New York, "Diagnosis and Treatment of Low Back Pain from the General Practitioner's Point of View."

New York City

Antiragweed Drive.—The city health department's antiragweed drive for the relief of hay fever sufferers will continue until mid-August. Ragweed is being sprayed with the chemical which destroys it before it gets to the pollen bearing stage. An unusually heavy growth has been reported this year in areas that were unsprayed last season. This year over 1,000 acres of ragweed has been destroyed in this way by the department of sanitation, the parks department and the health department.

New Research Laboratory.—Mutual Life Insurance Company of New York has agreed to finance the construction of a new $3,000,000 laboratory for the Sterling Winthrop Research Institute at East Greenbush, which will be leased back to Sterling Drug Company for thirty years with the tenant having the privilege of renewing the lease for six successive terms of ten years each. The four story laboratory will be divided into wings for chemical and biologic research and for administration and a library. The research wings will contain individual laboratory units, rooms for photography, x-ray and extreme temperature testing, as well as a pilot development plant. Dr. Maurice L. Tainter, Albany, director of the institute, said that the new laboratories will extend research into penicillin-like compounds, antibiotics, sulfonamide drugs, antimalarials, veterinary products, barbiturates, amino acids, streptomycin and other therapeutic preparations. Tropical medicine will be emphasized.

New Department of Psychiatry.—An independent department of psychiatry under the direction of Dr. Howard W. Potter has been announced by Long Island College of Medicine. The college announced also the appointment of Dr. Robert F. Barber, professor of clinical surgery since 1931, as emeritus professor. Heretofore the teaching of psychiatry has been conducted in cooperation with neurology. Dr. Potter received his medical degree from Columbia University College of Physicians and Surgeons, 1913. After serving in hospitals in New Jersey and New York he became director of research at the Letchworth Foundation, Thiells, in 1921 and was assistant director, New York State Psychiatric Institute and Hospital, from 1929 to 1934; also clinical professor of psychiatry at Columbia University College of Physicians and Surgeons and more recently professor of clinical psychiatry at Long Island College of Medicine. He was president of the American Association on Mental Deficiency in 1934.

Columbia to Provide Training in Rural Medicine.—The affiliation, effective at once, between Columbia University College of Physicians and Surgeons and the Mary Imogene Bassett Hospital in Cooperstown has been announced. Columbia expects to "contribute to the problem of training physicians for medical practice in small and rural communities and for better distribution of positions." The affiliation will "strengthen further the professional activities of the hospital through a stimulation and development of the professional staff in relation to undergraduate medical instruction and the training of interns and hospital residents." Facilities will be made available at the hospital for undergraduate medical education of students of the university.

OHIO

Dr. Porterfield Appointed State Health Director.—Dr. John D. Porterfield III, Columbus, has been appointed state health director, succeeding Dr. Roger Heering, Columbus (THE JOURNAL, July 5, p. 908). Dr. Porterfield, a graduate of Rush Medical College, Chicago, 1938, has been with the U. S. Public Health Service.

Appoint Director of Anesthesia.—Dr. Jacob J. Jacoby has been appointed associate professor of surgery and director of the division of anesthesia at the Starling-Loving University Hospital, Ohio State University, Columbus. Dr. Jacoby graduated in medicine at the University of Minnesota and has been serving as a research associate and assistant professor in anesthesia at the University of Chicago, where he has just received the degree of doctor of philosophy in pharmacology and anesthesia. He succeeds Dr. Norris E. Lenahan, who resigned April 30.

Drs. Culler and Barnes Appointed Department Heads.—Dr. Arthur M. Culler, member of the ophthalmology department of Ohio State University College of Medicine, Columbus, has been appointed chairman of the department, succeeding the late Dr. Albert D. Frost, who died Nov. 15, 1945. Dr. Culler received his medical degree at the University of Michigan Medical School, Ann Arbor, 1926, where he served as an instructor in ophthalmology from 1928 to 1930. Dr. Allan C. Barnes has been appointed head of the department of obstetrics and gynecology, succeeding Dr. Philip J. Reel, who has been acting part time chairman of the department. Dr. Barnes, who has been associate professor of obstetrics and gynecology for the past two years, received his medical degree at the University of Pennsylvania School of Medicine, Philadelphia, 1937, and his master's degree in obstetrics and gynecology from the University of Michigan Graduate School, Ann Arbor. Prior to entering the army in 1942 he was an instructor at the University of Michigan Medical School.

PENNSYLVANIA

Hospital Survey and Construction Division.—The governor signed legislation establishing a new Division of Hospital Survey and Construction in the State Department of Welfare July 7, thus opening the way for Pennsylvania's participation in the federal hospital improvement program. As in various other states, the agency is authorized to inventory existing hospitals, to survey the need for construction of new health facilities and to develop and administer a state plan for the construction of public and other nonprofit hospitals.

Philadelphia

Research on Poliomyelitis.—A grant of $106,000 to the University of Pennsylvania for a five year study of infantile paralysis has been made by the National Foundation for Infantile Paralysis. Detlev W. Bronk, Ph.D., director of the university's Johnson Research Foundation, will direct the research, which will investigate the metabolic process of nerve cells and how they are modified by the infantile paralysis virus. He will be assisted by Martin Larrabee, Ph.D., Frank Brink Jr., Ph.D., Thomas F. Anderson, Ph.D., and Philip W. Davies.

Pennsylvania Reorganizes Department of Medicine.—The University of Pennsylvania School of Medicine has announced a reorganization of its department of medicine and the appointment of a new department head. Dr. Francis C. Wood, Philadelphia, formerly assistant professor in medicine, is the new department head, succeeding Dr. O. H. Perry Pepper, Philadelphia, who wished to be relieved of administrative duties. Dr. Pepper has served the department for more than thirty years and will continue to teach and practice in the University Hospital until his retirement. Dr. Wood has been associated with the School of Medicine and Hospital since his graduation in 1926. During World War II he served in the Twentieth General Hospital. Drs. T. Grier Miller, Truman G. Schnabel and Charles C. Wolferth were named to full professorships in medicine. Dr. Miller, a graduate of the University of Pennsylvania School of Medicine, Philadelphia, 1911, is president of the Philadelphia County Medical Society. Dr. Schnabel, a graduate of the university in 1911, has been professor of clinical medicine and head of the university's teaching in medicine at the Philadelphia General Hospital. Dr. Wolferth, who graduated in 1912, is president of the Edward B. Robinette Foundation.

TENNESSEE

State Medical Election.—At the annual meeting of the Tennessee State Medical Association last April Drs. Franklin B. Bogart, Chattanooga, became president, Harley W. Qualls, Memphis, was made president-elect and William M. Hardy, Nashville, secretary-editor.

Dr. Aycock Returns to Tennessee.—Dr. George F. Aycock, after thirty years with the Army Medical Corps, has returned to his native state to take up the direction of the tuberculosis program at the University of Tennessee Hospital, Knoxville. The expanded tuberculosis program primarily will benefit the 7,500 students attending the University of Tennessee. Dr. Aycock recently retired from the Medical Corps as a colonel after many years of work in tuberculosis and diseases of the chest.

WEST VIRGINIA

New Superintendent of State Hospital.—Dr. Edward F. Reaser, Huntington, has been appointed superintendent of Huntington State Hospital, effective August 1, to succeed Dr. Charles T. Taylor, who has served as superintendent since 1933. Dr. Reaser is chief psychiatrist in charge of the mental hygiene clinic at the Veterans Administration regional office in Huntington. Previously he was assistant superintendent at Huntington State Hospital, resigning in November 1947 to accept the position with the Veterans Administration. A native of Glenville, he graduated at the Medical College of Virginia, Richmond, in 1930 and was on the medical staff at Pilgrim State Hospital, Brentwood, N. Y., when appointed assistant superintendent at the Huntington institution. He is a specialist certified by the American Board of Psychiatry and Neurology and a member of the American Psychiatric Association and the Medical Society of St. Elizabeth's Hospital.

WISCONSIN

Dr. Bowman Retires.—Dr. Frank F. Bowman on May 1 retired as health officer of the city of Madison, a position he has held for nineteen years. He was honored at a farewell dinner given by present and former employees of the city health department. Dr. Bowman, who is 74 years old, is a graduate of Rush Medical College, Chicago, 1897.

Symposium on Use of Isotopes.—The University of Wisconsin, Madison, will sponsor a symposium on the biologic applications of isotopes, September 10-13. The program includes:

David B. Sprinson, New York, Studies on Metabolism of Proteins.
Harland G. Wood, Ph.D., Cleveland, Studies on Metabolism of Carbohydrates.
Dr. Joseph G. Hamilton, San Francisco, Application of Tracer Research to Medicine.
Dr. Byron E. Hall, Rochester, Minn., Leukemia and Polycythemia.
Dr. Saul Hertz, Boston, Thyroid Disease.
William F. Bale, Ph.D., Rochester, N. Y., Health Hazards Involved in the Use of Radioactive Isotopes.

A panel discussion on Cancer will be held with Drs. Austin M. Brues, Chicago, Joseph G. Hamilton, San Francisco, Simeon T. Cantril, Seattle, and Paul S. Henshaw, Ph.D., Oak Ridge, Tenn., participating. Housing and meals will be provided at a cost of $5 a person daily. Reservations can be made and additional information obtained from Dr. Edwin C. Albright, Department of Medicine, 1300 University Avenue, Madison 6.

GENERAL

Scientists Go to Japan to Aid Research Plans.—The National Research Council has sent a group of American scientists to Japan to advise General Douglas MacArthur's staff on the democratization of scientific research. The group will consider plans submitted by Japanese scientific societies and make recommendations to the economic and scientific section of general headquarters in Tokyo. Led by Roger Adams, Ph.D., head of the department of chemistry, University of Illinois, other group members are Merrill K. Bennett, Ph.D., Stanford University, Palo Alto, Calif.; Dr. William D. Coolidge, director emeritus of research of the General Electric Company; William V. Houston, Ph.D., president of Rice Institute, Houston, Texas; William J. Robbins, Ph.D., director of the New York Botanical Garden, and Royal W. Sorensen, Sc.D., of the California Institute of Technology, Pasadena, Calif.

Research Fellowships Available.—The American College of Physicians announces that a limited number of fellowships in medicine will be available from July 1, 1948 to June 30, 1949 designed to provide an opportunity for research training either in the basic medical sciences or in the application of these sciences to clinical investigation. They are for the benefit of physicians who are in the early stages of their preparation for a teaching and investigative career in internal medicine. Assurance must be provided that the applicant will be acceptable in the laboratory or clinic of his choice and that he will be provided with the facilities necessary for the proper pursuit of his work. The stipend will be from $2,200 to $3,000. Application forms will be supplied on request to the American College of Physicians, 4200 Pine Street, Philadelphia 4, and must be submitted in duplicate not later than November 1. The American College of Physicians has announced its twenty-ninth annual session to be held in San Francisco, April 19-23, 1948 at the Civic Auditorium.

Graduate Course in Chest Diseases.—The American College of Chest Physicians is sponsoring a second annual postgraduate course in diseases of the chest to be held during the week of September 15-20 at the Municipal Tuberculosis Sanitarium, Chicago. The emphasis in this course, limited to thirty physicians, will be placed on the newer developments in diagnosis and treatment of diseases of the chest. Further information may be secured from the American College of Chest Physicians, 500 North Dearborn Street, Chicago 10.

American Congress on Obstetrics and Gynecology.—The third American Congress on Obstetrics and Gynecology will be held in St. Louis September 8-12 at the Municipal Auditorium. There will be a series of round table and panel discussions. The leaders of the discussions will be:

John L. Parks, Washington, D. C., Etiology of Abortion.
Ralph A. Reis, Chicago, Emotional Problems in Obstetrics and Gynecology.
Harold O. Jones, Chicago, Uterine Prolapse.
Samuel A. Cosgrove, Jersey City, N. J., Decentralization of Nurseries.
John Rock, Boston, Ovulation.
F. Bayard Carter, Durham, N. C., Prolonged Labor.
Joseph A. Hardy Jr., St. Louis, Treatment of Abortion.
Robert A. Kimbrough Jr., Philadelphia, chairman of panel on Cancer.
Emil Novak, Baltimore, Ovarian Tumors.
John I. Brewer, Chicago, Uterine Bleeding.
Raphael Kurzrok, New York, The Menopause.
Duncan E. Reid, Boston, Prolonged Labor.
Joseph L. Baer, Chicago, Work of Maternal Welfare Committees in the Larger Cities.
Newell W. Philpott, Montreal, Erythroblastosis.
Abraham F. Lash, Chicago, Geriatric Gynecology.
Edward D. Allen, Chicago, Endometriosis.
John M. Waugh, Rochester, Minn., Genital Relaxation.
Philip F. Williams, Philadelphia, Nutrition in Pregnancy.
William F. Mengert, Dallas, Texas, Prolonged Labor.
Edward A. Schumann, Philadelphia, chairman, panel on Cesarean Section.

Appointed to Secretariat of World Health Organization.—Two physicians have been added to the secretariat of the World Health Organization Interim Commission's headquarters office, New York City. Dr. William P. Forrest, D.P.H., has been appointed assistant director of the headquarters office and Dr. Chang K. Chu assistant director of the field services for China. Dr. Forrest was born in Glasgow, Scotland, and attended the Anderson College of Medicine and St. Mungo College of Medicine at Glasgow, the Royal College of Surgeons in Edinburgh and the University of Glasgow. He was chief medical officer with the United Nations Relief and Rehabilitation Administration's mission to the Ukrainian Soviet Socialist Republic. For two years he was medical officer of health and director of casualty services for the Notts County Council and the Mansfield and Warsop councils in England. Dr. Chu was born at Chekiang, China, and received his M.D. degree from the Peking Union Medical College and a degree of doctor of public health from Yale University Medical School. He has served as commissioner of the Kweichew Provincial Health Administration, director of the Public Health Personnel Training Institute at Chungking, China, and director of the National Institute of Health, Nanking, China. Dr. Chu was granted one year's leave from his post as director of the Chinese National Institute of Health to work with WHO.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the division of public health methods, U. S. Public Health Service:

Division and State	Week Ended July 26, 1947	Week Ended July 27, 1946	Median, 1942-1946	Total to July 26, 1947	Total to July 27, 1946	Total * March 16-July 26, 1947	Total * March 17-July 27, 1946
New England:							
Maine	0	0	0	7	3	4	3
New Hampshire	0	8	1	5	27	1	26
Vermont	1	0	0	9	9	1	5
Massachusetts	3	4	4	19	12	12	8
Rhode Island	0	0	0	13	0	12	0
Connecticut	0	6	6	10	29	7	21
Middle Atlantic:							
New York	15	30	30	125	180	89	147
New Jersey	8	5	5	30	40	24	34
Pennsylvania	9	11	11	49	53	35	41
East North Central:							
Ohio	10	38	14	56	111	46	96
Indiana	0	11	2	25	37	9	32
Illinois	9	66	12	78	210	56	202
Michigan	5	13	8	48	47	24	39
Wisconsin	0	18	1	26	42	2	29
West North Central:							
Minnesota	5	188	2	40	366	27	365
Iowa	2	17	2	27	73	19	64
Missouri	2	38	2	35	121	25	114
North Dakota	1	11	0	21	18	16	18
South Dakota	0	5	0	2	24	0	24
Nebraska	13	32	1	46	71	39	70
Kansas	6	36	9	29	126	11	122
South Atlantic:							
Delaware	4	1	0	5	2	5	2
Maryland	3	6	6	18	17	12	15
District of Columbia	0	0	0	3	2	1	1
Virginia	1	6	6	27	23	17	17
West Virginia	2	2	2	9	15	5	12
North Carolina	3	1	2	31†	42	16	35
South Carolina	1	1	2	9	15	8	12
Georgia	1	15	4	27	66	20	58
Florida	0	20	3	53	382	28	333
East South Central:							
Kentucky	2	4	11	17	40	16	37
Tennessee	10	6	10	34	29	22	20
Alabama	0	17	9	24	186	11	183
Mississippi	1	25	1	23	95	6	78
West South Central:							
Arkansas	2	18	6	27	91	17	79
Louisiana	3	18	6	38	149	20	130
Oklahoma	2	33	12	23	103	12	97
Texas	10	52	40	97	504	72	476
Mountain:							
Montana	0	3	1	4	35	2	19
Idaho	5	1	0	25†	3	15	3
Wyoming	0	4	0	6	14	3	13
Colorado	3	48	1	22	226	17	225
New Mexico	3	6	1	9	34	6	33
Arizona	1	9	1	13	29	10	26
Utah	0	5	3	6	18	1	12
Nevada	0	0	0	0	0	0	0
Pacific:							
Washington	2	11	2	30	76	22	43
Oregon	3	9	4	17	20	12	16
California	16	52	21	439	351	290	264
Total	167	910	...	1,736†	4,166†	1,125	3,699
Median, 1942-1946	...	...	391	2,439		2,042	

* Last two columns show reported incidence since approximate seasonal low week (week ended between March 15 and 21).
† Figures changed by corrected reports.

Marriages

E. Ross Jenney, Hollywood, Calif., to Mrs. Katalin Prohaszka of Budapest, Hungary, in Geneva, Switzerland, April 9.

Leldon W. Martin, Sebring, Fla., to Miss Clara Sheperd of Fairmount, Ga., in Miami April 27.

Clifford James Tichenor, Washington, D. C., to Miss Irene Mathilda Kruka at Cincinnati June 7.

Harold M. Jesurun to Miss Lolin Lopez Pinero, both of San Juan, Puerto Rico, May 17.

Willard Ellsworth to Miss Margaret McQueeney, both of New York, Dec. 28, 1946.

Golda Fischer, San Francisco, to Professor M. A. Joslyn of Berkeley, Calif., April 20.

Deaths

Charles Wesley Roberts ✠ Atlanta, Ga., a member of the Board of Trustees of the American Medical Association, died July 28, aged 63. Dr. Roberts was born in Nicholls, Ga., Dec. 13, 1883, and graduated at the University of Maryland School of Medicine, Baltimore, in 1906. He received a certificate of honor for his excellence in the examinations for his medical degree and later served as resident surgeon at the University Hospital. Dr. Roberts began practicing medicine at Douglas, Ga., in 1908, where from 1911 to 1916 he operated a private hospital. On Jan. 1, 1917 he opened an office in Atlanta, where he was an instructor in surgery at Emory University School of Medicine from 1918 to 1920 and then was appointed associate in surgery, serving until 1945. He had long been active in the work of the American Medical Association, serving as a member of the House of Delegates from 1925 to 1928 and again from 1932 to 1941, and as a member of the Council on Industrial Health from 1937 to 1941, in which year he was elected a member of the Board of Trustees of the Association. In 1946 he was reelected to the Board for a second term of five years, and at the recent Atlantic City session he was appointed a member of the Executive Committee of the Board of Trustees. Dr. Roberts was formerly chairman of the section on industrial health of the Southern Medical Association, a past president of the Eleventh District Medical Society, the Chattahoochee Valley Medical Association and the Southeastern Surgical Congress. He was a member of the advisory council of the Georgia State Board of Health, medical adviser of the Industrial Commission of Georgia from 1921 to 1938 and in 1946 was appointed a member of the State Hospital Advisory Committee. He was a fellow of the American Association of Industrial Physicians and Surgeons and the American College of Surgeons, an attending surgeon at the Georgia Baptist, Crawford W. Long Memorial and Grady hospitals, and was a member of the Atlanta Kiwanis Club from 1921 to 1938. Dr. Roberts contributed much to the surgical literature and at the time of his death was a member of the advisory editorial board of the *Southern Surgeon*.

CHARLES WESLEY ROBERTS
1883-1947

Francis Edward Harrington ✠ Minneapolis; born in Norfolk, Va., June 19, 1879; George Washington University School of Medicine, Washington, D. C., 1904; clinical professor of preventive medicine and public health at the University of Minnesota Medical School; served as city health commissioner, member of the Hennepin County Sanatorium Commission, director of hygiene of Minneapolis schools and secretary-treasurer of the International Society of Medical Health Officers; formerly affiliated with the U. S. Public Health Service; at one time medical inspector of the District of Columbia, health officer of Cumberland, Md., and Jefferson County, Ala.; past president of the Minnesota Trudeau Medical Society and the Minnesota Public Health Association and third vice president of the American Public Health Association; fellow of the American College of Physicians; founder and director of the Lymanhurst Health Center; served as acting superintendent of the Minneapolis General Hospital; awarded honorary degree of doctor of laws by Gonzaga College; died in West Palm Beach, Fla., May 9, aged 67, of cerebral infarct and pulmonary edema.

William Robert Thompson, Fort Worth, Texas; born in Perdue Hill, Ala., Dec. 24, 1862; College of Physicians and Surgeons, Baltimore, 1888; member of the American Medical Association; fellow of the American College of Surgeons; past president of the Texas Ophthalmological and Otolaryngological Society and the Tarrant County Medical Society; member emeritus and member of the original board of trustees of the State Medical Association of Texas, serving as secretary of the board for thirty-seven years; at one time associate professor of diseases of the eye, ear, nose and throat, dean and professor of ophthalmology at the Fort Worth School of Medicine; for many years city councilman; mayor pro tem from 1933 to 1937; chairman of the board from 1922 to 1927 at the City-County hospital, where he served as consultant to the staff; member, at one time vice chairman and later president of the staff of St. Joseph's Hospital; oculist and aurist of the Texas and Pacific, Southern Pacific, Rock Island, Santa Fe, Missouri Pacific and Fort Worth and Denver Railroads from 1900 to 1940; died May 1, aged 84, as the result of a fall.

James Pedersen ✠ New York; born in New York Aug. 16, 1864; College of Physicians and Surgeons, medical department of Columbia College, New York, 1890; an Affiliate Fellow of the American Medical Association; specialist certified by the American Board of Urology; member of the American Association of Genito-Urinary Surgeons, serving at one time as president, and the American Urological Association; served as associate professor of urology at the New York Post-Graduate Medical School and Hospital; instructor in genitourinary surgery at the University and Bellevue Hospital Medical College and professor of venereal diseases at the University of Vermont College of Medicine in Burlington; consulting genitourinary surgeon at the Englewood (N. J.) Hospital and the Stamford (Conn.) Hospital; died in Wilton May 12, aged 82, of heart disease.

Arthur John Lomas, Baltimore; born Sept. 17, 1879; McGill University Faculty of Medicine, Montreal, Que., Canada, 1902; served with the Royal Army Medical Corps and in France with the Canadian Army Medical Corps during World War I; during World War II executive director of the emergency medical service in the civilian defense system; served as surgeon in the U. S. Public Health Service reserve; at one time assistant director of the Johns Hopkins Hospital in Baltimore and director of the University Hospital at Iowa City; for sixteen years superintendent of the University Hospital; administrative consultant to five Catholic hospitals in Maryland: Mercy, St. Joseph's, Bon Secours and St. Agnes hospitals, all of Baltimore, and the Allegany Hospital in Cumberland; died at his home in Lutherville, Md., May 17, aged 67.

Curtis Alban Evans ✠ Milwaukee; born in 1879; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1904; formerly professor of anatomy at the Wisconsin College of Physicians and Surgeons; past president of the Milwaukee Academy of Medicine; member of the Milwaukee Surgical Society; served in France during World War I; fellow of the American College of Surgeons; member of the founders group of the American Board of Surgery; on the surgical staff of the Columbia Hospital; consulting surgeon, Johnston Emergency and Children's hospitals; for many years chief of staff of the Milwaukee Hospital, where he died May 3, aged 68, of heart disease.

William Calvin Crowell Jr., Maysville, Ky.; born in Maysville, Feb. 2, 1917; University of Louisville School of Medicine in Louisville, Ky., in 1943; interned at the Louisville General Hospital; began active duty as a first lieutenant in the medical corps, Army of the United States, in January 1944; his tour of active duty included surgical service in general, station and evacuation hospitals in this country and the European theater of operations; engaged in two major campaigns, the Battle of Central Europe and the Battle of Rhineland; released from active duty in July 1946 with the rank of captain; killed in an automobile accident Nov. 14, 1946, aged 29.

James Lee Wilson ✠ South Bend, Ind.; born in Janesville, Ill., Aug. 16, 1885; Rush Medical College, Chicago, 1912;

fellow of the American College of Surgeons; member of the founders group of the American Board of Surgery; member of the American Association for the Study of Goiter; president of the park board; member of the advisory board and executive staff at St. Joseph Hospital; surgeon for the Childrens Dispensary and Hospital Association; chief of the surgical staff, member of the board of directors, advisory board and executive staff, Memorial Hospital, where he died May 11, aged 61, of coronary occlusion.

James Linn Adams, Van Nuys, Calif.; Missouri Medical College, St. Louis, 1886; died March 18, aged 87.

Sanford Bailey ✦ Garden City, Kan.; Kentucky School of Medicine, Louisville, 1893; on the staff of St. Catherine's Hospital, where he died April 28, aged 75, of carcinoma of the pancreas.

William Dewey Balfour, Wailuku, Hawaii; Washington University School of Medicine, St. Louis, 1927; member of the American Medical Association; formerly vice president of the Territorial Association of Plantation Physicians; captain, National Guard, not on active duty; died April 13, aged 48.

Rose Anne Bebb ✦ New York; University of Minnesota College of Medicine and Surgery, Minneapolis, 1897; affiliated with the Bellevue Hospital; died April 16.

Plumb Brown, Springfield, Mass.; the Hahnemann Medical College and Hospital, Chicago, 1892; died April 28, aged 78, of carcinoma of the intestine with metastasis.

Edwin Bunnell, Willows, Calif.; Medical Department of the University of California, San Francisco, 1894; died in the Woodland (Calif.) Clinic Hospital April 26, aged 77, of carcinoma of the right lung.

John Rollo Burr, South Bend, Ind.; Chicago Homeopathic Medical College, 1897; died in the Memorial Hospital April 4, aged 73, of cerebral hemorrhage and sarcoma of the rectum.

Russell Williams Chidsey, New Holland, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1890; served during the Spanish-American War; found dead April 25, aged 78.

Frances Cohen ✦ New York; Cornell University Medical College, New York, 1900; formerly assistant director of educational hygiene for the city board of education and pediatrician in the department of health; served in the pediatric division of the Mount Sinai Hospital; died April 18, aged 73.

Ovee John Colwick, Durant, Okla.; Southwestern University Medical College, Dallas, Texas, 1906; member of the American Medical Association; died April 2, aged 66, of heart disease.

Max Davis, Boston; Harvard Medical School, Boston, 1925; diplomate of the National Board of Medical Examiners; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; fellow of the American College of Surgeons; assistant professor of gynecology and obstetrics at the Boston University School of Medicine; on the staffs of the Massachusetts Memorial and Beth Israel hospitals; died in Cambridge April 30, aged 46, of rheumatic heart disease.

Charles A. Dawson, Minden, Texas; Louisville (Ky.) Medical College, 1891; member of the American Medical Association; affiliated with the Henderson Memorial Hospital in Henderson; died April 26, aged 79, of diabetes mellitus.

Pasquale De Feo, Medford, Mass. (licensed in Massachusetts in 1905); died April 19, aged 72, of uremia.

Dell S. Edwards, Covington, Ky.; Woman's Medical College of Cincinnati, 1895; died April 24, aged 90, of heart disease.

Carl Hernfrid Fornell ✦ New York; Harvard Medical School, Boston, 1914; specialist certified by the American Board of Otolaryngology; served during World War I; formerly medical director of the Hartford Accident and Indemnity Company; on the staff of the Manhattan Eye, Ear, Nose and Throat Hospital; died May 7, aged 60.

Joseph Foster ✦ Santa Fe, N. M.; Western Pennsylvania Medical College, Pittsburgh, 1901; died April 21, aged 73, of carcinoma.

Charles Frederick Frankman, Greenville, Ohio; University of Michigan Medical School, Ann Arbor, 1928; affiliated with the Wayne Hospital; died April 25, aged 43, when struck by a train.

Maude Granger Furniss, Brookline, Mass.; Boston University School of Medicine, 1897; died April 14, aged 73, of chronic myocarditis.

Malcolm Brown Fyfe, Valparaiso, Ind.; Northwestern University Medical School, Chicago, 1903; member of the American Medical Association; served overseas during World War I; school physician at Valparaiso University; member of the city board of health; on the staff of the Porter Memorial Hospital; died May 11, aged 71, of rupture of an abdominal aneurysm.

Frederick Arthur Grossman, Wilmette, Ill.; Northwestern University Medical College, Chicago, 1897; served in the Coast Guard during World War I; died in the Illinois Central Hospital, Chicago, May 16, aged 76, of a hip fracture received in a fall.

William Hipp, Detroit; Detroit College of Medicine, 1906; member of the American Medical Association; died May 2, aged 69.

Arnold James Gelarie ✦ Ossining, N. Y.; Thüringische Landesuniversität Medizinische Fakultät, Jena, Thuringia, Germany, 1910; member of the American Public Health Association and the American Association for the Advancement of Science and others; at one time bacteriologist with the public health service at the U. S. Quarantine Station, Port of New York; died May 7, aged 61.

Earl Ray Gibbs ✦ Wilkinson, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1907; served during World War I; died in the Methodist Hospital, Indianapolis, May 13, aged 66, of carcinoma of the breast with metastases to the lung.

Jacob Benjamin Ginsburg, Boston; College of Physicians and Surgeons, Boston, 1920; died April 30, aged 65, of coronary occlusion.

Duke Marvin Godbey, Perryville, Ky.; Hospital College of Medicine, Louisville, 1905; member of the American Medical Association; died May 5, aged 68, of cerebral hemorrhage.

Orren Pakenham Goodwin, Ruston, La.; born in Longstaw, La., Nov. 18, 1881; Baylor University College of Medicine, Dallas, 1913; formerly affiliated with the Indian Service; served overseas during World War I; lieutenant colonel, medical reserve corps, not on active duty; served on the staffs of Veterans Administration hospitals in various places; formerly on the staffs of the State Hospital in Pineville and State Hospital in Little Rock; died in the Veterans Administration Hospital in Alexandria, April 26, aged 65, of heart disease.

John Monroe Gray, Joplin, Mo.; St. Louis College of Physicians and Surgeons, 1899; member of the American Medical Association; Spanish-American War veteran; on the staffs of St. John's and Freeman hospitals; died May 2, aged 73, of chronic myocarditis.

Angelina G. Hamilton, Anna, Ill.; the Hahnemann Medical College and Hospital, Chicago, 1897; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1908; affiliated with the Anna State Hospital; died in Port Huron, Mich., April 30, aged 74, of coronary thrombosis.

John E. Hetherington ✦ Grand Forks, N. D.; Jefferson Medical College of Philadelphia, 1909; served as a member of the state medical board; on the staff of the Deaconess Hospital; died May 9, aged 62, of arteriosclerosis and cardiac failure.

Frank Wheeler Hornbrook, Chevy Chase, Md.; Harvard Medical School, Boston, 1905; died May 2, aged 71.

Coit Inge Hughes, Phoenix, Ariz.; University of Louisville (Ky.) Medical Department, 1909; also a graduate in pharmacy; formerly secretary and superintendent of public health of Arizona; served during World War I, as county health officer and as a member of the state board of medical examiners; died May 4, aged 65.

Nicholas John Jackson, Joliet, Ill.; Jenner Medical College, Chicago, 1910; died May 7, aged 77, of carcinoma of the rectum.

Walker Allen Johnson, Orange, N. J.; Howard University College of Medicine, Washington, D. C., 1912; served during World War I; died May 7, aged 67.

William F. Johnson, Sebastopol, Miss. (licensed in Mississippi in 1907); died May 6, aged 73, of cerebral hemorrhage.

William P. Kelly ✦ Pittsfield, Mass.; Albany (N. Y.) Medical College, 1892; chairman of the school board; affiliated with St. Luke's Hospital, Hillcrest Hospital and House of Mercy; died April 25, aged 76, of heart disease.

Earl Warren Keyes, Cleveland; University of Wooster Medical Department, Cleveland, 1908; medical examiner for the Prudential Life Insurance Company; died May 9, aged 64.

Richard Glenn Kibbey, New Hartford, N. Y.; Syracuse University College of Medicine, 1907; member of the American Medical Association and the American Society of Anesthetists; on the staffs of the Marcy (N. Y.) Hospital, Masonic Soldiers and Sailors Memorial Hospital and St. Luke's Home and Hospital in Utica, where he died May 6, aged 64, of embolism.

Jerome J. Klein ✠ St. Albans, N. Y.; Georgetown University School of Medicine, Washington, D. C., 1937; diplomate of the National Board of Medical Examiners; interned at Easton (Pa.) Hospital; died April 19, aged 34.

Charles Edward Klontz ✠ Cherry Valley, Ill.; Northwestern University Medical School, Chicago, 1905; on the staff of St. Anthony Hospital in Rockford, where he died May 13, aged 67.

Kate Krieger, Cincinnati; Cincinnati College of Medicine and Surgery, 1898; also a pharmacist; died April 26, aged 84, of senility.

Jesse L. Lambert, Franklin, W. Va. (licensed in West Virginia in 1895); served as mayor of Franklin, health officer and on the county school board; died in the Rockingham Memorial Hospital in Harrisonburg, Va., May 14, aged 76, of diabetes mellitus.

Charles Henry Lamon, New Kensington, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1929; on the staff of the Citizens General Hospital, where he died May 3, aged 43, of pneumonia and heart disease.

Ezra Cornell Lawrence, Los Angeles; Drake University Medical Department, Des Moines, 1891; member of the American Medical Association; died May 3, aged 85.

Edward Burton Lehman, New Haven, Conn.; University of Tennessee College of Medicine, Memphis, 1928; member of the American Medical Association; died in the Grace Hospital March 30, aged 46.

James Buchan Littlejohn, Chicago; University of Glasgow Medical Faculty, Scotland, 1892; College of Medicine and Surgery, Chicago, 1905; died May 21, aged 78.

George David Lowry, Hooker, Okla.; College of Physicians and Surgeons, Keokuk, Iowa, 1888; died May 4, aged 84.

Ransom Wight Luce, Grand Rapids, Mich.; Detroit College of Medicine, 1906; died May 2, aged 66, of influenza followed by uremia.

George Roscoe Luton ✠ Santa Barbara, Calif.; Medical Faculty of Trinity University, Toronto, 1904; police commissioner; on the staffs of St. Francis Hospital and the Cottage Hospital, where he died May 20, aged 66.

Harrison Lee McCrary, Royston, Ga.; University of Louisville (Ky.) Medical Department, 1890; member of the American Medical Association; consultant in medicine at Brown's Hospital; died April 22, aged 81, of prostatic hypertrophy and uremia.

James William McCurdy ✠ Thomaston, Ga.; University of Georgia School of Medicine, Augusta, in 1935; interned at the Grady Hospital in Atlanta; served in the Pacific theater during World War II; died in the Macon Hospital, Macon, April 28, aged 36, of injuries received in an automobile accident.

James Samuel McFadin, Altus, Okla.; College of Physicians and Surgeons, Dallas, 1906; died March 31, aged 68.

William Jerome McHugh, Scranton, Pa.; St. Louis University School of Medicine, 1922; member of the American Medical Association; on the staff of the Ransom Mental Hospital in Ransom; died April 9, aged 52.

John Paxton McInnes, Toledo, Ohio; Northwestern Ohio Medical College, Toledo, 1890; died April 5, aged 84.

Hugh Gordon McKay ✠ Old Town, Maine; Tufts College Medical School, Boston, 1917; died April 28, aged 56.

William Monroe McKay, Salt Lake City; Rush Medical College, Chicago, 1925; member of the American Medical Association; secretary and state health commissioner and formerly director of the division of communicable disease, Utah State Board of Health; affiliated with the Thomas D. Dee Memorial Hospital in Ogden; died April 13, aged 59, of acute nephritis.

Herman Herve Mai, Chicago; College of Physicians and Surgeons of Chicago, 1890; member of the American Medical Association; died April 9, aged 81.

Robert George Mayer, Kaukauna, Wis.; University of Wisconsin Medical School, Madison, 1941; member of the American Medical Association; interned at the City Hospital in Cleveland; served in the medical corps, Army of the United States, in the Pacific theater during World War II and among other citations received the Bronze Star and the meritorious service award; affiliated with the Veterans Administration Hospital in Wood, where he died April 1, aged 32.

John Francis Messemer ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1915; on the staff of the Fordham Hospital; died April 16, aged 57, of pneumonia.

Leander Burgess Milbourne, Baltimore; University of Maryland School of Medicine, Baltimore, 1898; lieutenant commander in the U. S. Naval Reserve, serving in the Pacific theater during World War II; served during World War I; surgeon aboard the S. S. *Santa Isabel,* on which he died while at sea near Panama April 16, aged 67.

William Carlton Miller, College Springs, Iowa; Chicago Homeopathic Medical College, 1891; died April 25, aged 84, of carcinoma of the stomach.

Edwin Morrill Minnick ✠ Danvers, Ill.; Rush Medical College, Chicago, 1895; an Affiliate Fellow of the American Medical Association; died in St. Joseph Hospital, Bloomington, May 2, aged 77, of cerebral hemorrhage.

William Moitrier, Brooklyn; Long Island College Hospital, Brooklyn, 1881; member of the American Medical Association; formerly on the staff of St. Catherine's Hospital; died in Brentwood, N. Y., April 20, aged 90, of cerebral hemorrhage.

Alice Tucker Moore, Denver; Gross Medical College, Denver, 1897; died April 24, aged 84.

Baxter Edward Morrow, Kansas City, Mo.; Beaumont Hospital Medical College, St. Louis, 1892; died April 27, aged 76.

Albert Thomas Murphy, Elizabeth, N. J.; Jefferson Medical College of Philadelphia, 1915; member of the American Medical Association; served during World War I; on the staffs of the St. Elizabeth Hospital and the Alexian Brothers Hospital, where he died May 16, aged 56, of coronary thrombosis.

Charles F. Murphy, Cynthiana, Ind.; Louisville (Ky.) Medical College, 1894; died in the Welborn Baptist Memorial Hospital in Evansville April 23, aged 74, of cerebral hemorrhage.

Frank A. Murphy ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1903; affiliated with the Misericordia and St. Mary's hospitals in Philadelphia and the Fitzgerald-Mercy Hospital in Darby, Pa.; died in Margate City, N. J., April 25, aged 65, of cerebral hemorrhage and hypertension.

Harry Spencer Noble, Lima, Ohio; Kentucky School of Medicine, Louisville, 1893; member of the American Medical Association; fellow of the American College of Surgeons; president of the Home Banking Company of St. Mary's and chairman of the board of directors; served overseas during World War I; member of the staffs of the Memorial and St. Rita's hospitals; died in St. Mary's May 6, aged 75, of coronary embolism.

William James Norton, Columbus, Ind.; Tennessee Medical College, Knoxville, 1894; member of the American Medical Association; formerly member of the city board of health; served during World War I; died in the Bartholomew County Hospital April 25, aged 82, of myocardial degeneration.

William Frederick Neumann, New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1892; member of the American Medical Association; died May 18, aged 75.

Henry Sidney Oaks, Rutledge, Tenn.; Lincoln Memorial University Medical Department, Knoxville, 1912; died April 7, aged 63, of cerebral hemorrhage and hypertension.

Albert Grove Odell ✠ Clifton Springs, N. Y.; Syracuse University College of Medicine, 1904; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association and the American Association for Mental Deficiency; for many years on the staff of the Clifton Springs Sanatorium and Clinic, where he died May 19, aged 68, of fibrosis of the lungs and cardiac failure.

Francis James O'Hara, North Adams, Mass.; Georgetown University School of Medicine, Washington, D. C., 1904; member of the American Medical Association; served as mayor of North Adams, member of the school committee, board of health and planning board; on the staff of the North Adams Hospital; died May 2, aged 68, of heart disease.

Alfred Gustav Pfeiffer, Paramus, N. J.; University of the City of New York Medical Department, New York, 1885; member of the American Medical Association and the Medical Society of the State of New York; served as president of the Police Pension Fund of Paramus; died April 28, aged 90, of hypertension and arteriosclerosis.

Paul West Winder ✠ Shreveport, La.; University of Michigan Medical School, Ann Arbor, 1931; specialist certified by the American Board of Obstetrics and Gynecology; served during World War II; chief of the obstetric and gynecologic section, Highland Sanitarium; on the staff of the Charity Hospital; died May 5, aged 42.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 5, 1947.

Improvements in Artificial Limbs

At the Roehampton limb fitting center a demonstration of unusual interest took place. It was arranged by the Ministry of Pensions standing advisory committee, which was set up by Parliament two years ago to undertake research work on improvement in artificial limbs. About 20 amputees demonstrated their facility in using artificial limbs. Sir Charles Darwin, chairman of the advisory committee, said that its work might be divided into research, invention and "intelligence" and the research into legs and arms. The main interest in the leg had been the search for minor improvements, for excellent artificial legs already had been produced. The arm, owing to questions of muscular control and mechanical adaptation, presented a more difficult problem, and it had been estimated that twenty years was required to attain maximum skill with an artificial hand. In the field of invention the committee had considered more than a hundred devices, of which some twenty-four had survived. As far as "intelligence" was concerned, the most important thing had been the contact which the committee had with other countries. It was in regular correspondence with a similar committee in the United States and another in Canada, and it had undertaken a mission to Europe. A statistical analysis of all cases of artificial limbs in this country was being prepared. It was hoped that such a classification would help not only surgeons in ascertaining the best methods and sites for amputation but also limb makers in ascertaining where breakdown was liable to occur.

Dr. Craft of the research department at Roehampton carried through a demonstration. He began with women amputees. Experiments had been made with different forms of corset, each individually made, from which an artificial leg could be suspended. It was hoped that nylon would be of assistance, but it was a nonextensible fabric and did not wear well. The corsets had to be of stronger material. The corset, shaped to the body, took the place of the leather belt formerly worn round the waist. Several women demonstrated the perfect fitting of the limb. One, a below-knee amputee, was a skater. For men the usual support was a leather waist-belt and a strap over the shoulder, but it had been possible to discard the latter in some cases and to attain a better gait. The suction socket was the subject of experiment in this country after the war of 1914-1918 but was discarded for various reasons. A recent visit to Germany showed suction sockets with no suspension at all. The principle was a vacuum under the base of the stump. A number of men demonstrated their ease in walking with this type of limb.

The Remuneration of Consultants and Specialists

The National Health Service will make a great difference in the source of income of consultants. At present they do an immense amount of work for the poorer classes for which they receive no payment as honorary physicians and surgeons to the hospitals, the motive being that they acquire extensive experience in some branch which gives them the rank of consultant with the fees paid for private consultation by persons better off than the hospital class. But in the future they will be paid by the state for all their work. This will be an advantage to the younger consultants, who often have to do much gratuitous work for years before acquiring the reputation which brings much of an income. The Ministry of Health has appointed a committee of eleven members to recommend what ought to be the range of total professional remuneration of registered medical practitioners engaged in different branches of consultant or specialist practice in any publicly organized hospital and special service. The committee is to consider this with due regard to what have been the financial expectations in the past, to the financial expectations in other branches of the medical profession, to the necessary postgraduate training and qualifications required, and to the desirability of maintaining the proper social and economic status of specialist practice and its power to attract a suitable type of recruit, having regard to other forms of medical practice. On the committee the medical profession is represented by Lord Moran, president of the Royal College of Physicians, Professor D. Murray Lyon, president of the Royal College of Physicians of Edinburgh, Professor Henry Platt, and Dr. S. C. Shanks.

Congress of International Society of Surgery

The twelfth congress of the International Society of Surgery will be held in London, September 14-20. Discussions on the following subjects have been arranged by the secretariat in Brussels:

The Role of Penicillin in Surgical Practice, opened by Sir Alexander Fleming, London.

Recent Advances in Arteriography and Venography, opened by Professor Dos Santos, Lisbon.

Recent Advances in Vascular Surgery, opened by Professor René Leriche, Paris.

The Surgical Treatment of Pulmonary Stenosis, opened by Professor Blalock, Baltimore.

The Operative Treatment of Fractures, opened by Professor Danis, Brussels.

The Results of Early Operation in War Wounds of the Lungs, opened by Dr. Bastos Ansart, Barcelona.

The Results of Heparin in Surgery, opened by Dr. Crafoord, Stockholm.

The Role of Vasodilatation in Arterial Disease, opened by Dr. Diez, Buenos Aires.

Skin Defects: Their Repair by Flaps and Free Skin Grafts, opened by Professor T. Pomfret Kilner, Oxford.

Recent Progress in the Treatment of Burns, opened by a Russian surgeon.

Members of the society who wish to take part in the discussions should send their names to the secretary, Mr. H. W. S. Wright, 9 Weymouth Street, London, W. 1 or to the general secretary, Dr. Leo Dejardin, 141 Rue Belliard, Brussels. Surgeons of consultant standing who wish to join the society are invited to apply to the secretary as soon as possible. The entrance fee is 400 Belgian francs and the subscription, payable every three years, is 1,000 Belgian francs. Surgeons who wish to attend the congress and do not wish to become members of the society may do so on payment of $8.50 to be sent to Mr. V. H. Riddell, 68 Chester Square, London, S. W. 1.

Treatment of Tuberculosis of Hip Joint

At a meeting of the British Orthopedic Association Mr. M. C. Wilkinson stated that in tuberculosis of the hip he had found an unstable hip in 22 out of 50 cases treated conservatively alone. The value of operation was measured by its success in securing stability and in safeguarding against recurrence. He had particularly practiced osteotomy with medial displacement of the distal fragment but lately had supplemented this with an extra-articular femoral graft slid along the upper border of the neck. Operation was performed in the presence of active disease after the patient's resistance had been raised by conservative treatment. The reossification which ensued might be ascribed to autoinoculation or to the decompression of tuberculous foci. Bony ankylosis might take as long as two years, though the hip usually became quite stable before this.

Mr. Denys Wainwright supported Mr. Wilkinson's view that displacement osteotomy was often of great value in the treatment of tuberculous hip joint. He showed how a combination of osteotomy and an ischiofemoral graft produced rapid bony ankylosis. He also showed the result of supplementing long oblique osteotomy by traction, so that not only was apparent lengthening produced by angulation but also real lengthening by distraction.

OSLO

(From Our Regular Correspondent)

July 6, 1947.

The Norwegian Pharmacopeia

The latest edition of the Norwegian pharmacopeia was published in 1913! To be sure, a new edition was in preparation in 1939, but it got no further during the war, and now its publication in its 1939 form is being discussed with some misgiving. In this form it was not much more up to date than the Danish pharmacopeia of 1933. Meanwhile Denmark possesses an official pharmacopeia which has recently been brought up to date. Why not, it is argued, ignore the 1939 draft of the Norwegian pharmacopeia and boldly adopt the Danish pharmacopeia as Norway's own, pending the issue of a really up to date Norwegian pharmacopeia? Would this mean loss of prestige for Norway? Quite possibly. But would that matter much in comparison with the advantages to be gained? Already the Scandinavian countries have pooled their medical activities in some textbooks and in the conglomerate weekly journal *Nordisk medicin*.

A National Campaign Against Cancer

Norway ought long ago to have had an influential body representative of modern medical science to lead the campaign against cancer. We have, to be sure, an organization known as the Norwegian Association for Combating Cancer. Its most influential and active member is a layman, lawyer Eckbo, who to his own satisfaction has traced cancer to a faulty diet. In his advocacy of this theory in his recent book on cancer he has quoted the writings of the Norwegian pathologist Professor Kreyberg. The professor's protest that he had been misquoted has led to legal proceedings ending in a fine for Eckbo and the suppression of his book. In the light of this incident the time seems ripe for the creation of a representative national organization against cancer unhampered by a reputation for eccentricity. But how much easier it is to start with a clean slate than one blurred by erasures!

A Study of Gastroduodenal Ulcer

During the war years 1941-1944 a Norwegian surgeon working in the far north of Norway devoted much of his time to an intensive study of the conditions under which gastric and duodenal ulcer developed in a population mainly concerned with fishing. With the aid of the Dr. Malthe Foundation, this surgeon, Dr. Kaare Schanke, has succeeded in publishing his study as a supplement to *Acta chirurgica Scandinavica*. One of the most remarkable of his observations was that in a group of islands to the north of the polar circle, gastric ulcer was far more common than duodenal ulcer, a reversal of the relationship of the two to each other in most other regions. Gastric ulcer was more frequent in the rural than in the urban districts, whereas the opposite was the case with duodenal ulcer. Dr. Schanke found that irregularities in the mode of living of fishermen were the most important causes of gastric ulcer, and he is inclined to suspect that one group of causes is responsible for most cases of gastric ulcer, and another group for most cases of duodenal ulcer.

Paul Owren and His Parahemophilia

We are all proud of Paul Owren on account of his recent contribution to hematology. He was born in 1905 and, after graduating at Oslo University in 1931, settled down to private medical practice, the drudgery of which he enlivened by fox farming. His artificial insemination of foxes was pioneer work which helped to render this hobby quite lucrative. Throwing off the shackles of a general practitioner in 1938, and financed by his foxes, he returned to the wards of the Rikshospital in Oslo, where he encountered a remarkable instance of hemorrhagic diathesis which had lasted since childhood in a woman aged 29. In a tiny laboratory equipped with a more or less home-made outfit, he came to the conclusion that the greatly reduced coagulability of this patient's blood was due to the absence of a hitherto unknown clotting factor which is necessary for normal clotting and which he has called factor V. He has found the differential diagnosis between hemophilia and what he calls parahemophilia easy, as the faulty coagulation of the latter is not returned to normal by the addition of thrombokinase, as in the case of hemophilia. In his opinion parahemophilia is probably not hereditary.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANIERO, July 1, 1947.

Experimental Study of Brazilian Blastomycosis

Progress in knowledge of the infection produced by Paracoccidioides brasiliensis has been gained by an experimental study by Drs. Francisco Fialho and A. Padilha Gonçalves recently published. Following the way opened by J. Montenegro, whose studies have been previously reported, Fialho and Gonçalves observed the evolution of experimental lesions produced by intratesticular inoculations of guinea pigs. The authors disclosed an early reaction of the reticuloendothelial system, observed simultaneously with a leukocytic infiltration within twenty-four hours of the inoculation. This first reaction progresses to an exudative phase with formation of abscesses, and later to another, productive, with granulomatous organization. At a given time there is a balance between the exudative and the productive processes; after this the exudative changes become predominant, and gradually larger abscesses are formed. However, the productive process, which appears as early as the exudative one, is observed until the end. Although a longer period of observation would be desirable, the evolutionary progression of the lesions observed by Fialho and Padilha was logical and satisfactory. The presence of the fungus in its yeastlike form on the sixth day of infection led the authors to suggest the use of the inoculation of animals for diagnostic purposes, by injecting several guinea pigs, some of which should be killed in the course of the first month. By this procedure it is possible to confirm the diagnosis earlier. Once more the authors succeeded in observing the minute types of Paracoccidioides brasiliensis and the possibility of this fungus reproducing itself in the tissues by single budding, in addition to its characteristic reproduction by cryptosporulation. The authors believe that these conclusions must be submitted to further confirmation and other complementary studies which they are now performing.

Etiologic Frequency of Heart Diseases

Dr. Jairo Ramos, professor of medicine at the Paulista Medical School, has published a paper in the series of cardiologic studies he is undertaking. The paper concerns the etiologic frequency of heart diseases in general hospital patients. In a total of 1,700 adult patients, Ramos disclosed 457 cases of heart disease, thus demonstrating the high incidence (26.3 per cent) of these diseases in hospital patients. According to the etiology, the cases may be classified as rheumatism 110 (24.0 per cent), syphilis 83 (18.2 per cent), other infections 2 (0.4 per cent), nonrenal hypertension 59 (12.9 per cent), renal hypertension 49 (10.8 per cent), pulmonary hypertension 25 (5.5 per cent), sclerosis 79 (17.3 per cent), thyrotoxicosis 5 (1.1 per cent), neurocirculatory asthenia 8 (1.7 per cent), congenital malformations 2 (0.4 per cent), traumatism and tumors 3 (0.7 per cent) and other causes and unknown 32 (7.0 per cent).

The cases in which rheumatism was the etiologic factor include 89 with valvular lesions (80.9 per cent) and 21 with nonvalvular lesions (19.0 per cent). The valvular lesions were mitral stenosis and insufficiency 47 cases (52.8 per cent), pure aortic insuf-

ficiency 16 cases (17.9 per cent), aortic insufficiency and mitral stenosis 19 cases (21.2 per cent), aortic stenosis and insufficiency 3 cases (3.3 per cent), mitral stenosis and aortic stenosis and insufficiency 2 cases (2.2 per cent), mitral and aortic stenosis 1 case (1.1 per cent) and aortic stenosis 1 case (1.1 per cent). The 21 cases of nonvalvular lesions include 20 of chronic myocarditis and 1 of acute myocarditis associated with acute dry pericarditis. The 108 cases in which arterial hypertension was the etiologic factor include benign hypertension 48 cases (44.4 per cent), malignant hypertension 8 cases (7.4 per cent) and hypertension from acquired stenosis of the abdominal aorta, nodose periarteritis and paroxystic hypertonia 1 case each (0.9 per cent), acute glomerulonephritis 28 cases (25.9 per cent) and chronic glomerulonephritis 21 cases (19.4 per cent). The third important etiologic factor was syphilis, with 83 cases thus distributed: aortic insufficiency 60 cases (72.2 per cent), aneurysms 19 cases (22.8 per cent), and simple aortitis 4 cases (4.8 per cent). The 79 cases in which sclerosis was the etiologic factor included 69 cases of myocardiosclerosis (87.3 per cent), 2 cases of aneurysm (2.6 per cent) and 8 cases of aortic insufficiency (10.1 per cent).

ITALY

(From Our Regular Correspondent)

NAPLES, June 19, 1947.

Anniversary of Forlanini's Discovery

Precisely a hundred years ago, in 1847, the inventor of artificial pneumothorax, Carlo Forlanini, was born in Milan. Italy is preparing fitting honors for him on the occasion of the celebration of the anniversary of his discovery. The pneumothorax of Forlanini is still practiced throughout the world, though ideas have been somewhat modified since its original application. Forlanini considered the lung to be a wounded organ, incapable of healing, owing to the continual movement undergone during respiration. And so it was necessary to cause it to relax, retaining it at the same time in its full anatomic form by introducing aid intrapleurally. According to Forlanini, in other words, a diseased lung, for recovery, had to be rendered "static and full." This concept is now changed, as it is known that not only in the lung but in other organs too, for example the kidney, existing tuberculosis sometimes becomes even more grave under such conditions.

Anterolateral Thoracoplasty

However, the great benefits reported by the applications of Forlanini's method of intrapleural pneumothorax led investigators to continue research based on this principle. Pneumothorax treatment was unsatisfactory when diffuse adhesions existed between the two pleural layers and when the lesions of the lung involved large cavities and extensive destruction. So followed thoracoplasty in which successive ribs are cut away and the wall of the thorax collapses rigidly and firmly over the diseased lung (in a way, a surgical application producing a "static" lung of Forlanini's original concept), which becomes transformed into a relaxed organ, still retaining its form. It was found, however, that a lung treated in this way did not quite heal from tuberculous lesions: the remaining healthy tissue of the lung was damaged and often aggravated the situation. Following Sauerbruch's thoracoplasty came partial thoracoplasty in which the "demolishing" effect of the sudden collapse of the thorax over the lung was avoided: but even this was not free from criticism. It was then that Monaldi, graduate of the school of Forlanini and later noted in America and elsewhere for his method of "suction drainage," proposed what is known as anterolateral thoracoplasty. Here the aim of the surgeon is not a large reduction in lung space but to modify the tractive force of the thorax, reducing the forces exerted on the lung during normal respiration. That is, to relax the lung but to leave it still capable of performing its respiratory functions, particularly in the nonaffected parts. These adjust themselves to the conditions so as to compensate for the losses in the affected areas of the lung.

Further advances were made mainly through the work of Smith and Omodei-Zorini, present head of Italy's largest sanatorium in Rome, and another of Forlanini's school, in the development of extrapleural pneumothorax: in this, air is introduced at the back of the parietal layer. It is in many cases more effective than Forlanini's intrapleural procedure, but not so "demolishing" as the thoracoplasty of Sauerbruch and Graff.

Monaldi's Suction Drainage

Then followed the now popularly established method of Monaldi's suction drainage. In this a long, narrow catheter is introduced into the cavity of the affected lung and is connected to a suction apparatus by means of which the cavity can be drained. At first this procedure provoked criticism and was treated with reserve, though now its acceptance is world wide. There is no doubt that extraction of toxic matter from the infected parts produces beneficial results, in aiding the self-healing tendencies of the tissues and in cleaning out the lung. Maier spoke of Monaldi's method in 1944 during his talk to the medical section at the fortieth annual meeting of the National Tuberculosis Association in Chicago. He said that the Monaldi procedure "may result in apparent closure of the cavity with the conversion of the sputum, but even after subsequent thoracoplasty performed to maintain closure, the cavity may reopen to large size. As far as I know, the literature does not contain any large series of cases in which intracavitary suction drainage was followed by thoracoplasty and final results were evaluated." However, following the increasingly large number of favorable results of the Monaldi system (also in America), any doubts which Maier had must have subsequently been dispelled. In the *Journal of Thoracic Surgery* (**15**:153 [June] 1946) J. R. Head refers to 29 cases treated with Monaldi's suction method at the Edward Sanatorium, with analysis of the results obtained. The treatment may be applied alone, but often it is aided by thoracic surgery. Sometimes an operation on the phrenic nerve is performed for immobilization of the diaphragm. Immobilization of the hemilateral diaphragm relaxes the lung, and extraction from the cavity can then be carried out more fully and completely. At other times Monaldi's suction is associated with thoracoplasty.

Recently an important congress of tuberculosis surgeons in Italy, presided over by Monaldi himself, was held. The leading specialists in the country were present. Many reports were read, and supported with statistical evidence, and the results of various forms of treatment were given. Monaldi described fully the various methods: thoracoplasty, extrapleural pneumothorax and Monaldi's suction, applied either alone or in conjunction with other procedure.

Suction Drainage with Streptomycin

Head, in the article quoted, states that "Monaldi's method has come to occupy an important place in the treatment of pulmonary tuberculosis." There is every reason to believe that it will become even more important, especially in the light of modern antibiotic treatment. Modern treatment seeks for more direct, immediate introduction of the drug (as for example penicillin or streptomycin in disorders of the central nervous system, direct into the vertebral column) and to introduce streptomycin directly to the affected part of the lung. The method of Monaldi suggests the best means of doing this. The catheter can equally serve as a means of introducing the drug or cleaning out the cavity. Monaldi is probably already applying this method, at the moment, in the large sanatorium, which he personally directs. But reports of results have not yet been officially published.

Correspondence

POLIOMYELITIS AND PREGNANCY

To the Editor:—There is a growing feeling among physicians in certain quarters that susceptibility to poliomyelitis is increased during pregnancy. The experience in Florida during the 1946 outbreak, in which 572 cases were reported, possibly may be of interest.

Eight cases occurred among pregnant women, all of whom were in the second and third trimester. In this group there were two deaths, one of which was the only case in a pregnant Negro woman. Of the 6 remaining patients, 1 was in a respirator for a long time. Five women resided in Key West, which had a total of 45 cases with an attack rate of 2 per thousand. Four of the women in Key West were wives of navy personnel. Investigation in that city revealed no specific factors to explain the large number of pregnant women affected.

On the other hand, there were 78 cases of poliomyelitis among women of both colors in the age group 15 to 44, which might be considered the child bearing age. This would give a rate of 14 cases per hundred thousand for this group. During 1946 there were slightly over 55,000 births, from which a rate of 14 per hundred thousand for pregnant women can be computed. It would seem that, based on this small number of cases, there is no difference in the susceptibility between pregnant and non-pregnant females in the child bearing age.

EDWIN G. RILEY, M.D., Jacksonville, Fla.
Epidemiologist, Florida State Board of Health.

LEPROSY

To the Editor:—The following are my observations on the comments of Dr. G. W. McCoy of New Orleans (THE JOURNAL, Dec. 14, 1946, p. 947):

1. That early lesions of leprosy may be confused with the sarcoids, lupus erythematosus and syphilis, see pages 269-272 of McCarthy's Histology of Skin Diseases (St. Louis, C. V. Mosby Company, 1931), and note the following: Figure 115 from Kyrle's histopathology; "Boeck and Mazzi found acid-fast bacilli in nasal secretion"; figure 116 and description of histology of angiolupoid. They are indistinguishable from bacterionegative or the paucibacillated form of tuberculoid leprosy in reaction. I agree with the use of laboratory tests including histology, but, besides their limitations, how many dermatologists make use of them, how many patients are examined neurologically (Wise, Fred, in discussion, THE JOURNAL, Oct. 23, 1943, p. 470), and how many are followed up for years to await the possible appearance of Mycobacterium leprae? (Velasco: *Internat. J. Leprosy* **9**:91, 1941). Kyrle's instructive case of lupoid cited by McCarthy (p. 271) is no different in behavior bacteriologically and histologically from reacting tuberculoid leprosy. Rabello (THE JOURNAL, Aug. 15, 1935, p. 1205) contends that all symptoms of Besnier-Boeck's disease may be caused by leprosy, as proved bacteriologically, histologically and by animal inoculation. These diseases produce chronic inflammatory granuloma, and I do not know of any differential characteristics (see again Wise, p. 471).

2. Pathogenically, early leprosy lesions on contact children appear and progress for years without demonstrable bacilli by numerous and periodic examinations. Therefore the pathologic changes produced must be due to a "virus." Carreon (Transaction Open Meeting, Leprosy Advisory Board, p. 69, Bureau of Printing, Manila, 1932) examined twelve families of 12 segregated children and found either father or mother M. leprae negative clinical or suspected lepers; in no case were both parents with lesions; besides the parents, 9 other children were found clinical or suspected lepers. Velasco (Revista Filipina de Medicina y Farmacia, **25**:423, 1934) examined 15 bacteria negative clinically leprous parents and 46 of their children; he found 8 bacillated and 27 clinical lepers among them; in thirteen families both parents were examined, and in twelve only one spouse had the disease; in the thirteenth family both spouses had leprosy, but they came from the same endemic town and both have relatives as inmates in Culion Leper Colony. Adult immunity and infectiousness of the microscopically negative are evident.

3. As to "persons unquestionably infected during adult life," how exclude individuals as the Molokai cases under observation for a number of years by McCoy (Pub. Health Bull. 66, Washington, 1914) and finally confirmed but "which clinically gave only trifling evidences of skin lesions and none whatever that would under ordinary circumstances have been regarded as suspicious of leprosy," becoming manifest lepers after a history of contact in adult life? Nothing less than experiment is required to prove adult susceptibility. But since lesions may spontaneously but temporarily disappear according to observations on contact children, even one or several negative skin and neurologic examinations before the experiment cannot exclude existence of a latent infection.

4. I agree that Philippine control measures would be unnecessary in the United States, but the reason is not experience but infant protection, because even through education alone, leprosy infection in Texas and Louisiana can be prevented or reduced. This happened in Balala, Culion and Minnesota, where only the male Scandinavian lepers (Gronvold: *J. Cutan. & Ven. Dis.*, 1884, No. 2, p. 17) raised families with nonleprous wives; direct contact was mostly or entirely with the mothers, only indirect with the leprous fathers.

5. Proof of infantile susceptibility and adult immunity is based on an overlooked fundamental that under natural conditions transmission (or nontransmission) of a thoroughly understood communicable disease (bacterial, parasitic or insect borne) obeys a certain universal and obligatory biologic law. This is independent of those governing individual, local or regional clinical variations, and time required for their appearance. Forty years of observation in Culion Leper Colony shows that in Balala, the nonleprous district, with a population of about 1,000 employees, laborers including their families, only 2 adults developed manifest leprosy; the first had a leprous brother, the second a leprous first cousin as inmates in the colony. Daily direct contact of lepers with employees is the rule, and so is indirect contact with their children. Yet the disease failed to spread. This occurs in all similar leprosariums and explains clearly the disappearance of the disease among the descendants of Minnesota male lepers. Barring historical evidences which are subjective and therefore unscientific in leprosy study, adult immunity is a universally established fact not only by experience, but epidemiologically and by recorded experimental inoculations of man. In the leper district adjoining Balala, Lara (*Monthly Bull., Bureau of Health* **22,** 1946) found that at least 50 per cent of contact children of lepers showed at one time or another before the age of 5 years unequivocal leprosy lesions, some of which disappeared entirely. Since the biologic law governing nontransmission of leprosy (adult immunity) in Balala, Culion, is universal and obligatory, therefore the law governing transmission (infantile susceptibility) observed in the leper district of Culion must indubitably be identical with that controlling transmission elsewhere.

[A correction: In the fourth paragraph, fifth line, of my communication in THE JOURNAL, Oct. 19, 1946, page 407, "allowing the child" should read "allowing the patient to pursue a normal productive life."]

CRISTOBAL MANALANG, M.D.,
San Lazaro Hospital,
Manila, P. I.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Right of Court to Order Physical Examination of Plaintiff in Personal Injury Case.—The plaintiff sued the defendant druggists for injuries alleged to have resulted from the faulty filling of a prescription. From a judgment dismissing the cause, the plaintiff appealed to the Supreme Court of Idaho.

The trial of this case was set for a Monday morning. On the preceding Monday the plaintiff's counsel was requested to have the plaintiff submit to a physical examination by the defendant's physicians. The plaintiff's counsel was then acquiescent but he advised the defendant on the following Thursday that the plaintiff would not submit to an examination by one of the physicians selected. Other physicians were then suggested, but plaintiff's attorney advised defendant that plaintiff would not submit to a physical examination by any doctor other than her attending physician. On Saturday the defendant secured a court order requiring the plaintiff to submit to a physical examination at 12:30 on that day at the office of one of the selected physicians. Telephone conversations ensued between plaintiff and one of the physicians, the court and plaintiff's attorney, and plaintiff then indicated a willingness to submit to the examination but later stated she could not be present and secure attendance of her physician at that time. 12:30 went by and, after further negotiations, the meeting was deferred to 1:30. Plaintiff then stated that the time was too short, that she was engaged in taking care of a child and an older person and could not be present. As a result, no physical examination was made on Saturday. On the Monday morning set for a hearing the defendant moved, on affidavits pro and con, to dismiss the case because of the plaintiff's failure to comply with the court order. At this hearing the plaintiff testified that she had told her attorney "before 12:00 Saturday, that you (she) would submit to that (physical) examination at 4:00 o'clock that afternoon." At the conclusion of the hearing, in plaintiff's presence in open court, plaintiff's attorney stated "At this time we renew our offer to submit to an examination." Whereupon defendant's counsel renewed his objection to the offer and the trial court dismissed the cause. The record indicates that the plaintiff had no objection to the two physicians last suggested by the defendant to conduct the examination if her physician could also be present, which was agreeable to all. On appeal the plaintiff argued that the trial court abused its discretion in dismissing the suit and that the trial court had no authority to enter an order requiring plaintiff to submit to a physical examination.

The Supreme Court reviewed all the cases in both state and federal jurisdictions which have considered the question and concluded that a majority of the decisions recognize the discretionary power of a court to order an examination by physicians suggested by the defense and approved by the court, and to enforce noncompliance of such an order by dismissal. In this case, however, said the Supreme Court, the time fixed by the trial court for the examination was too short and the dismissal was unjustified because, while plaintiff perhaps unnecessarily delayed the examination on Saturday, she had a right to arrange to have her physician present at a time reasonably convenient to her. In ordering the examination a court should give due regard to plaintiff's health, and the time and place, though imperative and requiring prompt and immediate compliance therewith, should be reasonable as to all parties, permitting plaintiff to have present such attendants, reasonably limited as to number, as she may desire.

Accordingly the Supreme Court reversed the judgment of dismissal and remanded the cause to the trial court for further proceedings.—*Greenhow v. Whitehead's, Inc., 175 P. (2d) 1007 (Idaho, 1946).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in THE JOURNAL, Aug. 2, page 1198.

BOARDS OF MEDICAL EXAMINERS

ARKANSAS:* *Examination.* Texarkana, Nov. 6-7, 1947. Sec., L. J. Kosminsky, Texarkana.

ALABAMA: *Examination.* Montgomery, June 22-24, 1948. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery 4.

ARKANSAS: *Eclectic.** Little Rock, Nov. 6. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written.* Los Angeles, Aug. 25-28. *Oral.* San Francisco, Nov. 8-9. Sec., Dr. Frederick N. Scatena, 1020 N. St., Sacramento 14.

DISTRICT OF COLUMBIA:* *Endorsement.* Washington, Sept. 8. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6012 Municipal Bldg., Washington.

FLORIDA:* *Examination.* Jacksonville, Nov. 25-26. Sec., Dr. Harold D. Van Schaick, 6675 Windsor Lane, La Gorce Island, Miami.

GEORGIA: Atlanta, Oct. 14-16. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

ILLINOIS: Chicago, Oct. 14-16. Supt. of Registration, Dept. of Registration and Education, Mr. Philip M. Harman, Springfield.

INDIANA: *Examination.* Indianapolis, June 1948. Sec., Board of Medical Registration and Examination, Dr. Paul R. Tindall, K of P Bldg., Indianapolis.

KANSAS: Topeka, Dec. 3-4. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 North 7th St., Kansas City.

KENTUCKY: *Examination.* Louisville, Sept. 22-24. Sec., State Board of Health, Dr. P. E. Blackerby, 620 S. Third St., Louisville 2.

MARYLAND: *Medical Examination.* Baltimore, Dec. 9-12. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homeopathic Examination.* Baltimore, Dec. 9-10. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MINNESOTA:* St. Paul, Sept. 3-5. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: *Endorsement.* Jackson, Dec. 1947. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, Oct. 6-8. Sec., Dr. O. G. Klein, First National Bank Bldg., Helena.

NEVADA: Carson City, Nov. 3. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Concord, Sept. 11-12. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, Oct. 21-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO:* Santa Fe, Oct. 13-14. Sec., Dr. LeGrand Ward, 141 E. Palace Ave., Santa Fe.

NEW YORK: *Examination.* Albany, Buffalo, New York and Syracuse, Oct. 6-9, 1947. Sec., Dr. Jacob L. Lochner, Jr., Education Bldg., Albany.

OHIO: *Endorsement.* Columbus, Aug. 12, 1947. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

RHODE ISLAND:* *Examination.* Providence, Oct. 2-3. Chief, Division of Professional Regulation, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, Nov. 10-12. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

UTAH: *Examination.* Salt Lake City, June, 1948. Asst. Dir., Department of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

WEST VIRGINIA: *Examination.* Charleston, Oct. 2-4. Commissioner, Public Health Council, Dr. N. H. Dyer, State Capitol, Charleston.

WYOMING: *Examination.* Cheyenne, Oct. 6. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

---

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Juneau, First week in August. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARIZONA: Sept. 16. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

COLORADO: *Examination.* Denver, Sept. 17-18. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

DISTRICT OF COLUMBIA: *Examination.* Washington, Oct. 20-21. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6012 E. Municipal Bldg., Washington.

FLORIDA: *Examination.* Gainesville, Nov. 1. Final date for filing application is Oct. 16. Sec., Dr. W. M. Emmell, University of Florida, Gainesville.

MICHIGAN: *Examination.* Ann Arbor and Detroit, Oct. 10-11. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

MINNESOTA: *Examination.* Minneapolis, Oct. 7-8. Sec., Dr. Raymond N. Bieter, 105 M. Hall, University of Minnesota, Minneapolis.

NEBRASKA: *Examination.* Omaha, Oct. 7-8. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, State Department of Health, Room 1009, State Capitol Bldg., Lincoln 9.

NEW MEXICO: *Examination.* Santa Fe, Aug. 3. Sec., Miss Marion M. Rhea, % State Land Office, Santa Fe.

OKLAHOMA: Spring 1948. Sec., Dr. Frank Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, Sept. 6. Final date for filing application is Aug. 20. Sec., Board of Higher Education, Basic Science Examining Committee, Mr. C. D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: *Examination.* Aug. 13. Chief, Division of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

TENNESSEE: *Examination.* Memphis, Sept. 18-19. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

WISCONSIN: *Examination.* Madison, Sept. 27. Final date for filing application is Sept. 20. Sec., Mr. William H. Barber, Watson and Scott Sts., Ripon.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

33:557-746 (May) 1947

Direct Intracardiac Angiocardiography: Diagnostic Value. I. Chavez, N. Dorbecker and A. Celis.—p. 560.

Substitution of a Tetrahedron for the Einthoven Triangle. F. N. Wilson and F. D. Johnston.—p. 594.

*Endocardiac Electrocardiogram Obtained by Heart Catheterization in Man. A. Battro and H. Bidoggia.—p. 604.

*Myocardial Depression in Shock: Survey of Cardiodynamic Studies. C. J. Wiggers.—p. 633.

Kent's Fibers and the A-V Paraspecific Conduction Through the Upper Connections of the Bundle of His-Tawara. I. Mahaim.—p. 651.

Effect of Smoking on the Vasodilatation Produced by Oral Administration of 95 per Cent Ethyl Alcohol or a Substantial Meal. Grace M. Roth and C. Sheard.—p. 654.

Report from Cardiac Clinic of Boston Lying-In Hospital for First Twenty-Five Years. B. E. Hamilton.—p. 663.

Physiologic Condition of Heart in Natives of High Altitudes. A. Rotta. —p. 669.

Studies on Flutter and Fibrillation: The Influence of Artificial Obstacles on Experimental Auricular Flutter. A. Rosenblueth and J. Garcia Ramos.—p. 677.

Synchronization of Auricular and Ventricular Beats During Complete Heart Block. M. Segers, J. Lequime and H. Denolin.—p. 685.

Comparative Study of Blood Cultures Made from Artery, Vein and Bone Marrow in Patients with Subacute Bacterial Endocarditis. M. Salazar Mallén, E. Lozano Hube and M. Brenes.—p. 692.

Endocardiac Electrocardiogram.—Battro and Bidoggia of Buenos Aires studied the electrocardiographic variations in 23 persons as registered by endocardiac catheterization. The tracings show mainly the variations of potential of the heart, detected at the endocardiac surface. The auricular endocardiac electrogram (endocardiac P wave) consists normally of a series of rapid deflections (S, e, i, o waves) joined to a final slow deflection (Ta wave) by means of the o-u segment. The shape of the auricular electroendogram undergoes modifications according to the position of the electrode inside the auricle. Rapid deflections represent the process of depolarization of the auricles. Repolarization is represented by the final slow portion, as in the ventricular complex. The initial negative deflection (S wave) of the auricular complex is regarded as an exponent of the activity of the sinoauricular node. The endocardiac ventricular electrogram undergoes modifications in shape, depending on whether the electrode is placed in the right ventricle or right auricle. The authors describe the electroendogram obtained from the ventricle (type I) and from inside the auricle (type II). They also describe the variations of endocardiac potential in bundle branch block, in 1 case of auricular extrasystoles, in 1 case of auricular asynchronism and in cases of premature contractions of the right and left ventricles. The electrocardiographic curves registered with the catheter placed in the superior and inferior venae cavae and at different sites in the venous system are described. In the cases of bundle branch block the endocardiac electrogram shows the same characteristics that have been observed in experimental bundle branch block in the dog.

Myocardial Depression in Shock.—Wiggers and his associates studied the hemodynamics of hemorrhage and shock with the hope of elucidating especially the cardiovascular mechanisms involved in irreversibility. The cardiodynamic changes which occur after simple hemorrhage, during prolonged hypotension, during reinfusion of all the withdrawn blood and during spontaneous circulatory failure following infusion were studied in the same animal. Following simple hemorrhage sufficient to reduce mean arterial pressure to 50 mm. of mercury, the changes in ventricular actions are all secondary to reduction in venous return and decrease in effective central venous pressure. Electrocardiograms do not reveal significant changes. Changes in the contour of the central arterial pulse consist in abridgment of the period of systolic ejection and development of a primary spike followed by a peaked summit, and this is followed by a deep incisura. As a result of decreased venous pressure, ventricular filling is slower, initial tensions decrease in both ventricles, and their diastolic size is smaller. Pressure and volume curves indicate that the ventricles expel their diminished volumes with good velocity. If severe posthemorrhagic hypotension is prolonged for 135 minutes, death results from an oligemic type of failure unless blood is reinfused. Such reinfusion is of only temporary benefit; circulatory failure and eventually death follow. Irreversibility develops during the period of prolonged hypotension. This includes depression of the myocardium. Reinfusion of blood restores arterial pressures and pulses as well as cardiac output to normal, but in order to do so the ventricles are required to operate under supernormal conditions of high venous pressure and initial tensions. As soon as these reestablish at normal levels, cardiac output decreases and the ventricles pump less efficiently, owing to a depressed state of the myocardium. As arterial pressure declines, reduction in venous return becomes so great that the myocardial depression is obscured, though it is detectable by special tests. A progressive circulatory failure develops despite the fact that blood volumes are not significantly decreased. This represents a form of normovolemic shock due solely to default of the peripheral circulation and of the myocardium. Since the functional state of the myocardium and the capacity of the coronary responses at the time of shock-producing catastrophes may often be below par, myocardial depression may play as significant a subsidiary role in some cases of human shock as it did in animals submitted to a particular type of hemorrhage and shock.

American Journal of Medical Sciences, Philadelphia

213:513-640 (May) 1947

*Studies in Oral Administration of Penicillin: I. Assays of Various Preparations and Determination of Effective Therapeutic Dose. W. S. Hoffman and I. F. Volini.—p. 513.

*Id.: II. Results of Treatment of Pneumococcic Lobar Pneumonia and Other Acute Infections with Several Oral Penicillin Preparations. W. S. Hoffman and I. F. Volini.—p. 520.

*Serologic Response Following Penicillin Therapy for Early Syphilis. E. G. Clark, R. W. Maxwell and V. Scott.—p. 535.

Absorption and Elimination of Sulfadiazine Administered as Tablets, as Ground (Micronized) Powder and as Microcrystals. E. M. Boyd and R. W. Dingwall.—p. 549.

Effect of Sodium and Potassium Lactates on Absorption and Elimination of Microcrystalline Sulfadiazine. E. M. Boyd and R. W. Dingwall. —p. 557.

Hypothermia and Elevated Serum Magnesium in Patient with Facial Hemangioma Extending into Hypothalamus. F. W. Sunderman and W. Haymaker.—p. 562.

Clinical Studies of Pharmacologic Effects of Tetraethyl Ammonium Chloride in Hypertensive Persons Made in Attempt to Select Patients Suitable for Lumbodorsal Sympathectomy and Ganglionectomy. R. Birchall, R. D. Taylor, B. E. Lowenstein and I. H. Page.—p. 572.

Role of Trauma as Possible Etiologic Factor in Regional Enteritis: Effect of Nonpenetrating Trauma on Small Intestine of Dogs. M. A. Spellberg and A. Ochsner.—p. 579.

Generalized Capillary and Arteriolar Platelet Thrombosis. J. R. Carter. —p. 585.

Hypoprothrombinemic Action of Quinine Sulfate. L. A. Pirk and R. Engelberg.—p. 593.

Electrocardiographic Observations in Chronic Cholecystitis Before and After Surgery. E. Ruth Breitwieser.—p. 598.

*Monoplegia Following Carotid Sinus Pressure in the Aged. F. D. Zeman and S. Siegal.—p. 603.

Treatment of Carriers of Endameba Histolytica and Other Protozoa with Carbarsone, Chiniofon and Vioform. J. H. Arnett.—p. 608.

Present Status of Tryparsamide in Syphilotherapy. H. Koteen.—p. 611.

Medical Use of Radioactive Isotopes: I. Radioactive Isotopes in Hematologic Disturbances and Neoplasms. B. E. Hall and C. H. Watkins. —p. 621.

Id.: II. Radioiodine and Thyroid. F. R. Keating Jr.—p. 628.

Effective Dose of Oral Penicillin Preparations.—Hoffman and Volini assayed the plasma penicillin levels achievable with varying doses of penicillin administered orally and with a large variety of preparations, with and without diluents, antiacid substances or buffers. Doses of 25,000 units were usually ineffective in producing appreciable plasma penicillin levels. When 50,000 units was administered every two hours, plasma levels of 0.06 unit per cubic centimeter were frequently achieved.

but there were too many zero levels and too few levels higher than 0.06 unit per cubic centimeter to make the dosage a reliable substitute for parenteral therapy. Doses of 100,000 units, when preceded by a primary dose of 200,000 units one hour earlier, gave levels averaging higher than 0.125 unit per cubic centimeter for the first two hours and about 0.06 unit for the next two hours. Such levels were comparable to those obtained with intramuscular injections of 20,000 units every three hours. At this dosage there were no great differences in the results with the various preparations. Doses of 200,000 units gave perceptible plasma levels even at six and eight hours after the dose. From these observations, the therapeutic regimen established was a primary dose of 200,000 units followed by 100,000 units every three hours.

Oral Penicillin in Pneumococcic Lobar Pneumonia and Other Acute Infections.—Hoffman and Volini treated 49 patients who had pneumococcic lobar pneumonia and 81 patients who had miscellaneous infections produced by penicillin-sensitive organisms by administering orally several preparations of penicillin in primary doses of 200,000 units followed by 100,000 units every three hours. In 37 patients with pneumonia, fever and toxic symptoms subsided within forty-eight hours and in some patients within twelve hours. Of the remaining 12 patients failure was due to (*a*) inadequate absorption of penicillin, (*b*) the presence of penicillin-insensitive organisms such as a virus, (*c*) penicillin-resistant pneumococci or (*d*) overwhelming complications. The patients with miscellaneous infections responded similarly well to oral management with penicillin, those with hemolytic streptococci rapidly and those with staphylococci more slowly. The results were comparable to the authors' experience with parenterally administered penicillin. The plasma penicillin levels under this regimen were usually 0.06 unit per cubic centimeter or higher during most of the three hour interval between doses. Urticaria occurred in 5 (3.8 per cent) of the 130 treated patients. When purified preparations were used, only 2 spurious cases of urticaria developed. The severity of the infection has been found to have no relation to the penicillin dosage required. Only the sensitivity of the organism to penicillin should be the determining factor in dosage.

Penicillin in Early Syphilis.—Clark and his co-workers studied the serologic response following penicillin therapy in 208 patients with previously untreated primary or secondary syphilis. The serologic response observed during the first eight weeks following penicillin therapy for early syphilis is comparable to that previously reported during weekly treatment with the several arsenical drugs. Since some of the latter agents are known to be therapeutically inferior, this observation reemphasizes the fact that, in the final evaluation of antisyphilitic drugs, serologic response is not an all important criterion of therapeutic efficacy. In a comparison of the serologic response during the first eight weeks following penicillin with that previously recorded during weekly arsenical treatment by stage of disease (seropositive primary, early secondary and late secondary syphilis), an apparent retardation in the rate of fall of serum reagin following penicillin was observed. The serologic trends recorded during the first year following penicillin therapy provide evidence of a linear relationship between duration of infection and rate of fall of serum reagin—the longer the duration of disease the slower the serologic response. Studies of the effects of age, race and sex on the serologic response showed a delayed rate of fall of serum reagin in Negro females and in the youngest age group under 20 years. Evidence is presented that the retarded response observed is related (in these groups) to a higher percentage of patients who had (*a*) longer duration of disease, (*b*) the least efficacious treatment scheme or (*c*) a high incidence of subsequent relapse, or to a combination of these factors.

Monoplegia in the Aged.—Zeman and Siegel report 1 case of irreversible cerebral damage following carotid sinus pressure. A man aged 83 with long-standing hypertension developed a permanent right monoplegia within a few minutes after routine testing of carotid sinus responsiveness. The test should be reserved for cases in which it will serve a diagnostic or therapeutic purpose of definite importance. It should not be used as a routine test in patients past 50 and it should not be employed in the elderly to stop attacks of supraventricular tachycardia except in the unusual and obstinate cases when other measures have failed.

American Journal of Public Health, New York

37:353-498 (April) 1947

*Dust and Its Control as Means of Disinfection of Air. C. G. Loosli.—p. 353.
Problems and Errors in Assigning Causes of Bacterial Food Poisoning. G. M. Dack.—p. 360.
Inactivation of Virus of Infectious Hepatitis in Drinking Water. J. R. Neefe, J. B. Baty, J. G. Reinhold and J. Stokes Jr.—p. 365.
Investigations of Swab Rinse Technic for Examining Eating and Drinking Utensils. L. Buchbinder, T. C. Buck Jr., P. M. Phelps, R. V. Stone and W. D. Tiedeman.—p. 373.
Dishwashing Practice and Effectiveness (Swab-Rinse Test) in a Large City as Revealed by a Survey of 1,000 Restaurants. H. J. Kleinfeld and L. Buchbinder.—p. 379.
Critical Study of Machine Dishwashing. W. L. Mallmann, P. DeKoning and L. Zaikowski.—p. 390.
Field Studies Relating to Immunity in Infectious Hepatitis and Homologous Serum Jaundice. R. L. Gauld.—p. 400.
California Hearing Conservation Program. J. M. Bierman and D. R. Caziarc.—p. 407.
*Review of Induction and Discharge Examinations for Tuberculosis in the Army. E. R. Long and E. L. Hamilton.—p. 412.
Demonstration of Hormesis (Increase in Fatality Rate) by Penicillin. W. A. Randall, C. W. Price and H. Welch.—p. 421.
Public Opinion Measurement as an Instrument in Public Health Practice. H. N. Calver and O. T. Wingo Jr.—p. 426.
*Report of Outbreak of Q Fever at National Institute of Health: Epidemiologic Features. R. J. Huebner.—p. 431.
Studies on Histoplasmosis in Rural Community. B. J. Olson, J. A. Bell and C. W. Emmons.—p. 441.

Dust Control and Disinfection of Air.—According to Loosli the bacterial content of dust found in homes, schools, factories, offices and hospitals varies with the different environments. Saprophytic organisms usually predominate, but parasitic and pathogenic agents may be found in large numbers. There are ample data to show that dust is an important vehicle for the spread of certain diseases of bacterial and virus etiology in the laboratory, hospital wards and army barracks. It most likely plays an equally important role in the spread of infections in schools and homes. Ultraviolet light, glycol vapors and hypochlorous acid employed in the disinfection of air have only a limited effectiveness against dried dust borne organisms. Oiling floors, bedclothes and other textiles is a highly effective procedure for the control of dust, lint and dust borne bacteria. The action of the oil is a mechanical one only. Although the most important "environmental reservoirs" of pathogens found in hospital wards are the floors and bedclothes, all surfaces, as well as all textiles (blankets, sheets, pajamas, clothes of attending nurses and doctors) should be oiled to bring about the maximum dust control. Studies indicate that oiling floors, bedclothes and other textiles can effect a significant reduction in the incidence of respiratory tract infections of streptococcus etiology in hospital wards and army barracks.

Examination for Tuberculosis in Army.—Long and Hamilton say that as of Aug. 1, 1945 approximately 15,065,000 Selective Service registrants in the 18 through 37 year age groups had been physically examined at local boards and induction stations, of whom 4,828,000 had been placed in class 4-F. Of this number 129,900 were so classified because of tuberculosis. This represents 2.7 per cent of all men in the 4-F class and 8.6 men per thousand examined. The rejection rate for tuberculosis in selectees dropped from 14.9 per thousand in 1942 to 7.8 in 1945. The rate was continuously higher for white persons than for Negroes. Some liberalization in application of standards for acceptance, and a lowering in age of selectees, were the chief apparent reasons for the decrease. The curve of hospital admission rate for tuberculosis in the army was characterized by high points at the beginning and end of the war. The peak at the beginning was due to inadequacy of induction examination, with resultant acceptance of numerous men found later to be tuberculous. The high point at the end was due to discovery of cases in the course of physical examination on discharge. Discharge for tuberculosis totaled approximately 15,000 men in the years 1942-1945 inclusive. About 60 per cent of the patients admitted to hospitals for tuberculosis were ultimately discharged as having active tuberculosis. In physical examination on separation a large number of cases of minimal tuber-

culosis were discovered. The rate of discovery was higher in men with oversea service than in men without, a fact suggesting that new infections were acquired in greater number overseas than at home.

Q Fever at National Institute of Health.—Huebner says that between Dec. 17 and May 30, 1945 an outbreak of Q fever involving 47 persons occurred in a single building of the National Institute of Health, Bethesda, Md. The outbreak was unique in three respects: (1) the large number of human cases involved (47), (2) the apparent variation in immunologic status of the several populations at risk and (3) a concomitant outbreak in two guinea pig colonies in the same building. Clinical as well as serologic evidence of Q fever was detected in 44 of 142 workers and in 3 of 55 visitors to this building. Rocky Mountain spotted fever tick vaccine and exposure during a previous outbreak of Q fever were factors possibly tending to reduce the incidence of Q fever during the 1946 outbreak. A chronologic study of cases in laboratory workers showed a correlation between the dates of preparation of yolk sac antigens and the probable dates of exposure in the cases. The unsuspected resistance of Rickettsia burneti to such chemical agents as solution of formaldehyde and the manipulations required in preparing antigens were considered to be possible factors in the outbreak. Guinea pig excreta were also considered a possible source of the human outbreak, since viable R. burneti have been recovered from the urine of guinea pigs months after defervescence of the disease.

American Review of Tuberculosis, New York

55:301-384 (April) 1947

International Union Against Tuberculosis. K. Emerson.—p. 301.
*Pneumoperitoneum in Treatment of Pulmonary Tuberculosis: Results in 710 Cases from 1937 to 1946. R. S. Mitchell, J. S. Hiatt Jr., P. P. McCain, H. F. Easom and C. D. Thomas.—p. 306.
Transverse Myelitis Accompanying Tuberculous Meningitis. R. H. Rigdon.—p. 332.
Management of Primary Tuberculosis in Children. R. V. Platou.—p. 341.
*Pulmonary Function Following Pneumothorax: Investigation of Volume and Ventilation of Lungs. G. Birath.—p. 349.
*Studies in Chemotherapy of Tuberculosis: VIII. Comparative Action of Four Sulfones in Experimental Tuberculosis in Guinea Pigs and Combined Action of Streptomycin with One of the Sulfones. M. I. Smith, W. T. McClosky and E. L. Jackson.—p. 366.
Diagnostic Culture of Tubercle Bacilli: Simplified Procedure in Public Health Work. Marjorie Van Vranken.—p. 374.
Rehabilitation Difficulties. E. Bridge.—p. 379.

Pneumoperitoneum.—Mitchell and his co-workers employed artificial pneumoperitoneum in the treatment of 710 patients with pulmonary tuberculosis. Four hundred and seventy-four of these patients were so treated for three months or longer. The report is based on this group except for the complications which cover the entire 710 cases. The use of pneumoperitoneum for an average of 54.5 weeks was responsible for 57 per cent satisfactory results in 188 white patients and, used for an average of 50.5 weeks, was responsible for 37 per cent satisfactory results in 286 Negro patients with advanced pulmonary tuberculosis not amenable to conventional forms of collapse therapy. Pneumoperitoneum was useful in relieving symptoms in terminal tuberculosis and it was occasionally useful in obliterating old pneumothorax spaces in which the lung had failed to reexpand, in obliterating empyema spaces and in controlling pulmonary hemorrhage when other methods failed. An abdominal binder is a useful adjunct to pneumoperitoneum in most patients. The complications of pneumoperitoneum given to 710 patients for periods ranging from one dose to 306 weeks were minor in 8.6 per cent and major in 4.7 per cent; pneumoperitoneum was the direct cause of death in 1 case. Pneumoperitoneum was responsible for a significant increase in the failure of diaphragms to regain normal function following phrenic crush. Tuberculous enteritis is a contraindication to the method. The possibility of using pneumoperitoneum should always be considered in planning the treatment of advanced pulmonary tuberculosis.

Pulmonary Function Following Pneumothorax.—Birath studied 25 patients with pleurisy with effusion without parenchymal lesion and in whom so-called preventive pneumothorax treatment was terminated by his method of estimation of the total lung volume and its subdivisions and of the respiratory dead space. Total and vital capacities were diminished. Equilibrium and residual capacities were not generally diminished to the same degree, and their share in the total capacity was thus increased. While the diminished total and vital capacities were due to the impairment of the thoracic and diaphragmatic mobility through pleural adhesions, the cause of the increased relative lung volume values was a hypoventilation of certain parts of the lung, provoked by the same cause. In an additional 11 cases with completed pneumothorax treatment and with more or less extensive parenchymal lesions, the majority presented low total and vital capacities, considerable increase of the relative lung volume values and in certain cases increased values for the respiratory dead space. The cause of the serious impairment of the lung function was in some cases in part parenchymal contraction with so-called compensatory emphysema and reduction of the parenchyma, but in the majority of cases the cause was pleural changes following pneumothorax treatment (ventilatory insufficiency). It is suggested that in certain cases, when a lung retraction complicates pneumothorax treatment, the treatment should be abandoned and replaced with other collapse measures.

Chemotherapy of Tuberculosis.—Smith and his co-workers studied the chemotherapeutic efficacy of (1) the sodium salt of 4-amino-4′-galacturonylaminodiphenylsulfone (galacturonide), (2) 4-amino-4′-ureidodiphenylsulfone (carbamyl), (3) 4-amino-4′-n-propylaminodiphenylsulfone (n-propyl) in experimental tuberculosis of guinea pigs in comparison with sodium p,p′-diaminodiphenylsulfone-N,N′-didextrosesulfonate (promin). The chemotherapeutic effectiveness of these compounds, expressed as the ratio between the extent of tuberculous involvement in the controls and treated animals, was 2.7 for compound 1, 2.6 for compound 2 and 2.8 for compound 3 as compared with 2.6 for promin. The n-propyl derivative is less than one fifth as toxic as promin. The chemotherapeutic effectiveness in a group of animals treated with streptomycin and compound 1 was 27.0. Seventy-five per cent of the animals in this group showed no gross evidence of tuberculosis or only doubtful and insignificant lesions, though 95 per cent of them reacted to intracutaneous tuberculin, and subinoculation tests with tissue suspensions gave positive results in nearly all cases. The combined application of streptomycin and the monogalacturonyl derivative of 4,4′-diaminodiphenylsulfone in the treatment of experimental tuberculosis gave as good results as those previously reported with streptomycin and promin.

Diseases of Nervous System, Chicago

8:137-168 (May) 1947

*Asymmetry in Occipital Electroencephalograms. O. Sugar.—p. 141.
Relationship of Psychiatry to Problems of Medical Care. W. Darley.—p. 151.
Histamine Treatment of Cerebral Arteriosclerosis. J. H. Taylor.—p. 154.
Magical Thinking and Ritual to Preserve Omnipotence as Demonstrated in Cases of Compulsion Neurosis. D. C. Wilson.—p. 155.
Neurologic Clinical Pathologic Conference of the Cincinnati General Hospital. M. Rosenbaum.—p. 160.
Group Psychotherapy. M. M. Pearson.—p. 163.

Asymmetry in Occipital Electroencephalograms.—Sugar undertook a study of asymmetry in side-to-side distribution of electrical activity in the human brain, because of the occurrence of differences in routine clinical electroencephalography. Over 1,000 patients were examined by means of a four channel electroencephalograph, using the standardized army technic for electrode placement, time of recording and basic interpretation. In migraine, neurocirculatory collapse, cephalalgia, intracranial masses and intracerebral disease such as hemiplegia and hemianopsia, asymmetries appeared in numbers which are statistically significant as compared to normals. No such significant results were obtained with epileptic, psychoneurotic or psychopathic personalities, in posttraumatic syndromes and infections of the nervous system or in persons with syncope. Twenty per cent of the patients had depression of the alpha activity of the left occiput, 8.2 per cent had depression of the right occiput, and 71.8 per cent had equal amounts of alpha activity on the two sides. The corresponding figures for amplitudes were 14.1, 8.1 and 77.8 per cent. In the absence of gross cerebral abnormalities, such depressions of amplitude and alpha activity may be due to diminished blood supply to the affected side. The presence of such asymmetries is considered to be an aid in the diagnosis of migraine and other disorders of cerebral circulation.

Journal of Allergy, St. Louis

18:149-220 (May) 1947

*Histamine Antagonists: VII. Comparative Antianaphylactic Activity of Some New Antihistaminic Drugs. J. M. Rose, A. R. Feinberg, S. Friedlaender and S. M. Feinberg.—p. 149.
Lysis in Vitro of Sensitized Leukocytes by Ragweed Antigen. T. L. Squier and H. J. Lee.—p. 156.
Pollen Tolerance: Its Bearing on Treatment of Hay Fever. F. M. Rackemann.—p. 164.
*Contact Type Eczematous Dermatitis: Modern Classifications and Remarks on Therapy. M. B. Sulzberger.—p. 176.
Occupational Dermatitis, with Special Reference to Eczema Dermatitis of Hands. J. A. Tolmach.—p. 179.
Some Problems of Atopic Dermatitis in Infancy and Childhood. L. W. Hill.—p. 181.
Atopic Dermatitis in Infants, Children and Adults, with Special Reference to Role of Inhalants and Dander. F. A. Simon.—p. 186.
Antibodies to Ragweed Extract: Demonstration by Collodion Particle Technic in Immune Rabbit Serum but Not in Serum of Treated Patients. O. Swineford Jr. and R. Houlihan.—p. 190.
Anaphylactogenic Properties of Heparin in Guinea Pig. J. Luiz Cortes, M. Grolnick and L. Loewe.—p. 196.
Blood Studies in Allergy: IV. Variations in Eosinophils Following Test Feeding of Foods. T. G. Randolph.—p. 199.
Sensitizing Factor in Merthiolate. F. A. Ellis.—p. 212.
Allergy (Asthma) to Ingested Gum Tragacanth: Case Report. E. B. Brown and S. B. Crepea.—p. 214.

Histamine Antagonists.—Rose and his co-workers determined the protective effect of antihistaminic drugs by injection of histamine in the dorsal vein of the penis of the guinea pig fifteen minutes after the animal had received the protecting drug intraperitoneally. Anaphylactic experiments were carried out by intracardiac injections of horse serum forty-eight hours after intraperitoneal administration of pooled rabbit anti-horse serum. Protection against anaphylaxis was afforded by methods similar to those used against histamine. Studies parallel to those conducted in anaphylaxis in the intact animal were carried out on the sensitized intestinal strip of the guinea pig. The protection afforded against anaphylactic shock by the antihistaminic drugs studied (benadryl, pyribenzamine, antergan and neoantergan) decreases as the amount of the drug is decreased. All the compounds studied showed essentially similar protection against anaphylaxis. Observations on the sensitized intestinal strip of the guinea pig bear out the lack of difference of protection rendered by benadryl and neoantergan in anaphylaxis in the intact animal. Against a single lethal dose of histamine the antihistaminic drugs studied are almost equally effective. Observations on the sensitized intestinal strip indicate that the anaphylactic contraction was inhibited by an amount of antihistaminic drug which had no effect on the contraction of the same magnitude due to histamine.

Contact Type Eczematous Dermatitis.—According to Sulzberger, allergic contact type eczematous dermatitis is to be considered as an entity which is (1) by definition "allergic," (2) which is usually produced by contact of the sensitized skin cells with the allergen coming from without and (3) which is a dermatitis that presents the clinical and histopathologic picture characteristic of eczematous changes. Both prognosis and therapy of this dermatitis are different from those of seborrheic dermatitis, nummular eczema, atopic dermatitis or many forms of dermatitis due to direct damage by chemical and physical agents. Prevention and treatment must be confined to the discovery and elimination or reduction of contact with the causal allergen and, in addition, to the appropriate forms of local dermatologic management.

Journal of Gerontology, Springfield, Ill.

1:411-498 (Oct.) 1946

Dawn of Gerontology. F. Hinman.—p. 411.
Effect of Aging on Course and Outcome of Pregnancy. L. M. Hellman.—p. 418.
Effect of Coffee, Human Diet and Inheritance on Life Span of Rats. Gladys A. Sperling, J. K. Loosli, L. L. Barnes and C. M. McCay.—p. 426.
Size of Somatic Chromosomes at Different Ages in Rat. J. J. Biesele.—p. 433.
Some Chemical Changes in Human Thoracic Aorta Accompanying Aging Process. V. C. Myers and W. W. Lang.—p. 441.
Effect of Yeast Nucleic Acid on Survival Time of 600 Day Old Albino Mice. T. S. Gardner.—p. 445.
Effect of Sodium Thiocyanate and Yeast Nucleic Acid on Survival Time of 700 Day Old Albino Mice. T. S. Gardner and F. B. Forbes.—p. 453.

Journal of Lab. and Clinical Medicine, St. Louis

32:475-582 (May) 1947. **Partial Index**

Mechanism of Thymol Turbidity Test. P. P. Cohen and F. L. Thompson.—p. 475.
Study of Serum Biliverdin Concentration in Various Types of Jaundice. E. A. Larson, G. T. Evans and C. J. Watson.—p. 481.
Differential Agglutination of Human Erythrocytes: Evaluation of Technic. L. E. Young, R. F. Platzer and J. A. Rafferty.—p. 489.
Fibrinogen Deficiency: Clinical Features and Probable Etiologic Factors. L. B. Yeager, P. S. Rhoads and S. Freeman.—p. 502.
Biochemical Studies During Malarial and Artificial Fevers. E. A. Gall and A. Steinberg.—p. 508.
Normal Sedimentation Rates in Active Pulmonary Tuberculosis: Study of 1,066 Cases in a Naval Tuberculosis Center. T. H. Noehren.—p. 526.
Simplification of the Serologic Diagnosis of Salmonella Cultures. F. Kauffmann and P. R. Edwards.—p. 548.
Prothrombin Time and Variables in the Method. J. W. Martin, G. H. Curfman Jr. and F. L. Cavano.—p. 554.

Journal National Malaria Society, Tallahassee, Fla.

6:1-90 (March) 1947. **Partial Index**

A Review of Studies on Immunity to Vivax Malaria. M. F. Boyd.—p. 12.
Records of Mosquito Dissections in Northern New Guinea. J. P. Toffaleti and W. V. King.—p. 32.
*Toxic Reactions Following Administration of Atabrine Dihydrochloride. P. K. Smith.—p. 37.
A Malaria Reconnaissance of the Republic of Haiti. J. Harland Paul and A. Bellerive.—p. 41.
Standardization of Test for Antimalarial Effect with Plasmodium Cathemerium in the Canary. W. D. Gingrich and Eugenia W. Schoch.—p. 68.
Studies on Serology of Malaria: Malarial Precipitation Reactions with Lipid Antigen. R. L. Kahn, A. H. Wheeler and C. Adams.—p. 74.

Toxic Reactions of Atabrine Dihydrochloride.—Reviewing observations made on air force personnel, Smith says that the administration of atabrine dihydrochloride in certain doses is associated with a high incidence of gastrointestinal disturbances. The suppressive doses associated with the highest toxicity were those in which 0.2 Gm. or more was given as a single dose twice a week on nonconsecutive days. Toxic reactions were infrequent with daily doses of 0.1 Gm.

Journal of Pediatrics, St. Louis

30:485-644 (May) 1947

Presidential Address. J. I. Durand.—p. 485.
Deficits in Diarrhea. J. L. Gamble.—p. 488.
Rickettsial Diseases of Childhood: Clinical Pathologic Study of Tick Typhus, "Rocky Mountain Spotted Fever," Murine Typhus and "Endemic Typhus." J. C. Peterson, J. C. Overall and J. L. Shapiro.—p. 495.
Early Evidence of Psychoses in Children: Special Reference to Schizophrenia. C. Bradley.—p. 529.
Streptomycin: A Review. J. Ehrlich.—p. 541.
*Osseous Congenital Syphilis: Effects of Penicillin on Rate of Healing. A. J. Hill Jr., R. V. Platou and J. T. Kometani.—p. 547.
Celiac Syndrome: Relationship of Celiac Disease, Starch Intolerance and Steatorrhea. Dorothy H. Andersen.—p. 564.
*Evaluation of Benadryl, Pyribenzamine and Other So-Called Antihistaminic Drugs in Treatment of Allergy. B. Ratner.—p. 583.
Genitourinary Conditions in Infants and Children. H. L. Kretschmer.—p. 603.

Penicillin in Osseous Congenital Syphilis.—Hill and his associates show that osseous congenital syphilis is a dynamic process which waxes and wanes as the infant grows older. Control data were derived from 134 roentgenographic observations on 98 infants before penicillin therapy was started. Inspection of the curve for total severity of untreated lesions shows that 1 to 90 days of age represents the period of increasing severity, 91 to 210 days that of rapidly decreasing severity, 211 to 365 days that of moderate decline, and 13 to 24 months that of slow decline. Improvement results from decreasing severity of osteomyelitis and osteochondritis; periosteal changes increase in prominence over a longer period and persist as the commonest residuums. The course of a given lesion cannot be accurately predicted. Dosages of penicillin employed so far have temporarily accelerated healing of osseous syphilis only in infants treated during the first three months of life. This acceleration occurs principally in osteochondritis and osteomyelitis; simultaneous improvement in periostitis is only of probable significance. No such significant effects were observed among those treated during the next four months. The mode of healing for any particular type of lesion, as herein described, has not been evaluated. Increase in severity of these lesions during

or shortly after penicillin therapy occurs in an age group in which this phenomenon is to be expected without treatment. Pseudoparalysis disappears without specific changes in the roentgenograms; indeed, osseous lesions may even appear worse after pseudoparalysis subsides.

Evaluation of Antihistaminic Drugs in Allergy.—Ratner arrives at the conclusion that the release of histamine has not yet been proved to be the fundamental factor in anaphylaxis or allergic reactions; hence any therapy based on such a concept must be called into question. Benadryl and pyribenzamine and other drugs of this group have not been proved to be antihistaminic, either chemically or pharmacologically. These drugs have not proved of value in the eradication of allergic syndromes. They do not appear to prevent the entrance of antigen into the circulation and the antigen-antibody reaction. It is the nature of the allergic episode to be self limited, and it is often spontaneously terminated. For this reason a wide variety of drugs seem to relieve it. Benadryl and pyribenzamine alleviate symptoms of diverse allergic conditions. The greatest benefits are derived in acute urticaria and hay fever in allaying pruritus and nasal and lacrimal discharges. These drugs should have a place along with epinephrine, ephedrine and atropine as excellent antispasmodics. They are not as efficient in asthma and eczema, the more chronic and fixed syndromes. These drugs must be used vigilantly because they may have serious side effects which may affect the higher brain centers. They deserve a place in our armamentarium as symptomatic remedies, but the author deplores that some physicians and particularly the lay public, as a result of widespread publicity, feel that they are cures.

Journal of Urology, Baltimore

57:789-948 (May) 1947. **Partial Index**

Testis Biopsy in Infertility. E. T. Engle.—p. 789.
Unusually Large Pelvic Hydronephrosis Treated by Excision of Kidney Cap. M. Paul.—p. 799.
Fibrin Foam and Gelfoam in Experimental Kidney Wounds. S. A. MacDonald and W. H. Matthews.—p. 802.
*Gelfoam Hemostasis in Prostatic Surgery. S. A. MacDonald and R. E. Powell.—p. 812.
Use of Absorbable Gauze (Oxidized Cellulose) in Urologic Surgery. J. K. De Vries.—p. 816.
Use of Gelfoam in Transurethral Resection. N. J. Heckel and J. I. Waller.—p. 828.
Agenesis of Right Kidney with a Retroperitoneal Cyst Arising in a Persistent Metanephros. M. F. Weingarten, J. M. Orem and O. C. Cox.—p. 829.
Effects of Overdistention of the Renal Pelvis and Ureter: Study on Pyelovenous Backflow. H. C. Rolnick and P. L. Singer.—p. 834.
Aneurysm of Hypogastric Artery Producing Urinary Tract Obstruction: Report of Case. W. E. Goodwin and H. B. Schumacker Jr.—p. 839.
Reimplantation of Ureter into Bladder by Flap Method. N. F. Ockerblad.—p. 845.
Vaginal Cystectomy. V. F. Marshall and M. Schnittman.—p. 848.
Pseudosphincter Formation in Neurogenic Bladder. C. Ney, O. Auerbach and T. I. Hoen.—p. 858.
Foreign Body (Kirschner Wire) Removed from Bladder. D. W. Branham and H. M. Richey.—p. 869.
Treatment of Chronic Nonspecific Prostatitis with Oral Penicillin. R. D. Herrold.—p. 897.
Synergistic Action Between the Sulfonamides, Certain Dyes and Streptomycin Against Gram-Negative Bacteria: Preliminary Report. F. S. Thatcher and J. T. MacLean.—p. 902.
Streptomycin in Genitourinary Infections. C. Ferguson and T. S. Hersbey.—p. 932.

Gelfoam Hemostasis in Prostatic Surgery.—According to MacDonald and Powell fibrin foam fulfilled all criteria of an ideal hemostatic agent for prostatic surgery, but more recently there has been produced a synthetic substance called gelfoam. It closely resembles fibrin foam in appearance, is used in exactly the same way and possesses all the desirable characteristics of the original substance. It is available for clinical use in the form of small wafers. The authors review observations on 15 cases, in 3 of which fibrin foam was used and in the other gelfoam. In 1 of these cases hemostasis was not satisfactory. In this case the bleeding was probably arterial in type. In all other cases almost complete hemostasis was achieved. No clots formed in any case, the drainage fluid was never more than pale pink and within forty-eight to seventy-two hours it became perfectly clear. The authors think that with the use of either gelfoam or fibrin foam the mortality rate of prostatic surgery should be considerably reduced, since shock due to excessive bleeding has always been an important cause of its mortality.

Nebraska State Medical Journal, Lincoln

32:177-212 (May) 1947

Compound Fractures. W. L. Sucha.—p. 179.
Clinical Manifestations of Syphilis. D. J. Wilson.—p. 182.
Ancylostomiasis. H. H. Zinneman.—p. 185.
Nasal Physiology in Dietary Deficiency. L. P. Coakley.—p. 187.
Management of Cervicovaginal Disorders. J. J. Grier.—p. 191.
Absorbable Sponge as a Hemostatic Agent. J. C. Kennedy.—p. 194.
Principal Causes of Maternal Deaths in Nebraska, 1940-1945. W. E. Rapp.—p. 198.

32:213-256 (June) 1947

Urticaria and Allied Dermatoses. A. C. Curtis.—p. 220.
Care of Child with Rheumatic Heart Disease. J. A. Henske.—p. 223.
Clinical Aspects of Rheumatic Fever. C. Moore.—p. 225.
Evaluation of Laboratory Procedures in Rheumatic Fever. P. N. Morrow.—p. 227.
Prevention of Rheumatic Fever. J. M. Thomas.—p. 230.
Treatment of Rheumatic Fever. C. A. Tompkins.—p. 231.
Management of Urinary Tract Emergencies by General Practitioner. L. W. Lee and E. Davis.—p. 234.

New Orleans Medical and Surgical Journal

99:545-598 (May) 1947

Anthrax in Louisiana. R. H. Heeren.—p. 545.
*Status of Abortus Infections in the United States. H. J. Schmidt.—p. 552.
Toxic Effects of Digitalis. A. N. Evans.—p. 555.
Infection of Mouth and Pharynx: Report of 98 Cases. F. L. Bryant.—p. 566.
Sigmund Freud. G. L. Usdin.—p. 569.

Brucellosis in the United States.—According to Schmidt, the majority of the cases of brucellosis in the United States are of the abortus variety. In consideration of the widespread prevalence of the organism in milk and dairy products, it is not surprising that the abortus variety should attain a more rapid and greater attenuation than would the suis or melitensis types. The true incidence of the disease is not known, but the widespread distribution of the organism in milk and the attenuation of it by the cow over many years has resulted in a chronic and obscure disease most difficult to diagnose and obstinate to treat. The attenuation of Brucella abortus has detracted much from the value of laboratory procedures for diagnosis.

New York State Journal of Medicine, New York

47:657-800 (April 1) 1947

Laboratory and Clinical Criteria of Rheumatic Carditis in Children. L. M. Taran.—p. 703.
*Effect of Ultraviolet Air Sterilization on Incidence of Respiratory Infections in a Children's Institution: Six Year Study. R. A. Higgons and Gertrude M. Hyde.—p. 707.
New Rickettsial Illness Occurring in New York City: Supplementary Report. B. Shankman and K. Gardens.—p. 711.

47:801-928 (April 15) 1947

Physical Medicine in Traumatic Injuries. G. G. Deaver.—p. 847.
Physical Therapy in Treatment of Arthritis. L. Maxwell Lockie and E. Musgrove.—p. 851.
Place of Physical Medicine in Treatment of Patients with Mental Conditions. B. Simon.—p. 854.
Comments on Army Radiology in World War II. E. K. Reid.—p. 858.
Pediatric Approach to Management of Asthma in Childhood. B. Ratner.—p. 861.
Possibility of Preventing Breast Cancer in Women: Is Artificial Feeding of Infants Justified? L. Gross.—p. 866.
An Anthropologist Looks at American Indian Medicine. A. C. Parker.—p. 868.
Medicine in New York Folklore. H. W. Thompson.—p. 870.
Is General Practice Becoming a Specialty? H. L. Nelms.—p. 874.

Effect of Ultraviolet Air Sterilization in Children's Institution.—Installation of ultraviolet radiant units in the children's building of St. Luke's Convalescent Hospital subjects every cubic foot of air in the building to a sterilizing effect equivalent to more than 100 complete air changes per hour. The output of the bulbs is tested periodically with a Luckiesh-Taylor ultraviolet meter containing a special fluorescent material whose maximum sensitivity is for 2,537 angstroms radiation. If the efficiency of the lamps falls below 75 per cent of their original output the incidence of infection begins to rise. Frequent dusting of the lamps is important. During 1943 the lights were turned off for several months because of a shortage of bulbs, and the incidence of infections showed an upward trend. During the three year control period 3.98 per cent of the children were febrile, as against 2.38 per cent for the three year experimental period. This shows a difference of 1.60 per cent,

or eleven times the standard error of the difference. Comparison of the control and experimental periods during the winter months alone again shows a difference of 1.96 per cent, which is again eleven times the standard error of the difference. These figures indicate a reduction of 33 per cent in the number of children febrile from respiratory disease for the treated years as against the untreated years. House plants do not tolerate the ultraviolet radiation and usually die. Otherwise there have been no deleterious effects from the lights. The children have no difficulty in sleeping in the faint glow, which resembles moonlight. The attendant staff soon observed that the usual children's institution odor had completely disappeared, and some of the nurses commented on the freshness of the atmosphere.

Proc. Soc. Exper. Biol. & Med., Utica, N. Y.

64:385-518 (April) 1947. **Partial Index**

*Low Toxicity of Sulfonamide Mixtures: Combinations of Sulfathiazole, Sulfadiazine and Sulfamerazine. D. Lehr.—p. 393.
In Vitro Sensitivity of Brucella to Streptomycin: Development of Resistance During Streptomycin Treatment. W. H. Hall and W. W. Spink.—p. 403.
Epithelial Keratinization as Evidence of Fetal Vitamin A Deficiency. J. G. Wilson and J. Warkany.—p. 419.
Further Studies on the Acute Toxicity of Mercurial Diuretics. R. A. Lehman.—p. 428.
*Reactions of Human Body Louse (Pediculus Humanus Corporis) to the Ingestion of Guinea Pig Blood. V. Cabasso.—p. 437.
*Mass Infection of Body Lice with Rickettsia Prowazeki. V. Cabasso. —p. 439.
Effect of Pentaquine in Patients with Hypertension. E. D. Freis and R. W. Wilkins.—p. 455.
Studies on Cigaret Smoke Irritation: Determination of Edema Producing Properties of Certain Types of Cigaret Tobaccos. P. S. Larson, H. B. Haag and J. K. Finnegan.—p. 476.
Pharmacologic Characteristics of Bacitracin. J. V. Scudi and W. Antopol. —p. 503.

Low Toxicity of Sulfonamide Mixtures.—Lehr studied the toxicity, the absorption and the excretion of the combinations sulfadiazine-sulfathiazole, sulfadiazine-sulfamerazine and sulfadiazine-sulfathiazole-sulfamerazine in albino rats. These combinations of partial dosages proved significantly less toxic than any one of their separate constituents in equal or comparable total dosage. The mixture of three sulfonamides was less toxic than either combination of two drugs. Mixtures of sulfonamides were more completely absorbed and excreted than equal amounts of their individual constituents. Blood levels from mixtures were distinctly higher than expected on the basis of mathematical computations from the values of single sulfonamides. It was reasoned that the use of a mixture containing three sulfonamides in human therapy would almost completely eliminate the possibility of concrement formation in the urinary tract at the routine dose level.

Reaction of Human Body Louse to Ingestion of Guinea Pig Blood.—Experiments reported by Cabasso indicate that, contrary to general belief, guinea pig blood per se is not toxic to the human body louse. Although experiments proved that the red blood cells of guinea pigs remain undigested in the intestine of the louse, additional experiments proved that lice fed once on guinea pig blood live their normal life span when their daily feedings are continued subsequently on human blood.

Mass Infection of Lice with Rickettsia Prowazeki.—Cabasso demonstrates that human body lice fed once on a typhus infected guinea pig at the height of the febrile period, and subsequently fed on a typhus immune human being, develop massive infection with Rickettsia prowazeki. In comparison with the rectal inoculation of lice for the preparation of the Weigl type typhus vaccine, this method of infecting lice seems to offer certain advantages.

Public Health Reports, Washington, D. C.

62:629-668 (May 2) 1947

*Studies of Fungus Antigens: Quantitative Studies of Cross Reaction Between Histoplasmin and Blastomycin in Guinea Pigs. A. Howell Jr. —p. 631.
Communitywide Chest X-Ray Surveys: Introduction to the Problem. F. J. Weber.—p. 652.

Cross Reactions Between Histoplasmin and Blastomycin.—Howell says that the specificity of the histoplasmin reaction in man has become of great importance since the demonstration of a high degree of correlation between pulmonary calcification and sensitivity to histoplasmin in individuals who do not react to tuberculin. Three lots of histoplasmin and five of blastomycin and heat-killed antigens prepared from yeast cultures of Histoplasma capsulatum and Blastomyces dermatitidis have been tested on guinea pigs experimentally infected with Histoplasma capsulatum and Blastomyces dermatitidis. It has been shown that the number of experimentally infected guinea pigs which reacted to histoplasmin, blastomycin or the heat-killed yeast phase antigens depends on the particular lot of antigen and its dilution. If the critical titers of these antigens are determined and if these concentrations are used to study cross reactions, the degree of cross reaction between these antigens is small and the antigens are therefore relatively specific for guinea pigs experimentally infected with the homologous fungi. It is necessary to consider the degree of sensitivity of the animals employed to determine the titer of an antigen, that is, if the sensitivity level is low, a high concentration of the antigen will have to be used to elicit a reaction, and therefore a false impression of the critical titer of the antigen will be obtained. Such high concentrations of antigen will produce a high percentage of cross reactions.

Southern Medical Journal, Birmingham, Ala.

40:369-454 (May) 1947. **Partial Index**

*Sulfasuxidine and Sulfathalidine in Surgery of Colon. E. J. Poth. —p. 369.
*Translumbar Aortography: Aid in Management of Hydronephrotic Kidney. A. K. Doss.—p. 376.
Vagal Resection in Treatment of Gastroduodenal Ulcer. J. S. Lastra and P. P. Nobo.—p. 382.
Diagnosis and Treatment of Cardiospasm. P. P. Vinson.—p. 387.
Treatment of Fibrosarcoma. I. A. Bigger.—p. 392.
Comparative Clinical Values of Some New Drugs in Pyodermas. H. M. Robinson and H. M. Robinson Jr.—p. 409.
Diagnoses Commonly Missed in General Practice. M. P. Neal.—p. 414.
Practical Handling of Bacteriology by Clinical Pathologist. Emma S. Moss.—p. 427.
Retarding Denervation Atrophy. G. C. Knowlton.—p. 432.
Irradiation Therapy of Benign Uterine Hemorrhage. I. H. Lockwood, A. B. Smith and J. W. Walker.—p. 435.
Vascular Mechanisms in Allergic Headaches. C. B. Shuey.—p. 440.

Use of Succinylsulfathiazole and Phthalylsulfathiazole in Surgery of Colon.—Poth shows that evidence has been accumulating over the past five years which indicates that succinylsulfathiazole and phthalylsulfathiazole, when properly administered, are bacteriostatic agents which will modify the bacterial flora of the bowel contents, allow a satisfactory preoperative mechanical preparation of the colon, favor early healing of the colon at the line of suture and reduce the incidence of postoperative peritonitis and wound infection. The judicious use of these drugs during the preoperative and postoperative surgical periods decreases the operative mortality following colonic surgery and simplifies the surgical procedures. The proper use of succinylsulfathiazole and phthalysulfathiazole requires that they be used as adjuvants to and not as substitutes for established surgical practices.

Translumbar Aortography in Management of Hydronephrotic Kidney.—Doss points out that poor concentration of radiographic mediums or the apparent delay in excretion of a substance used in determining renal function no more justifies the removal of an enlarged hydronephrotic kidney than does a reasonably normal retrograde pyelographic shadow in an unobstructed poorly functioning kidney necessarily demand its preservation. When employing various solutions and mediums in an attempt to determine the true worth of the kidney, too much attention has been paid to the anatomic appearance of the kidney, at the same time giving too little attention to the effect the dilution factor of accumulated urine within the pelvis has on the mediums employed to estimate function. Actually, the enlarged and seemingly worthless kidney may be a better unit functionally and therefore more capable of sustaining life than the other more normal looking one. It has been the author's practice to obtain an arteriogram before renal exploration. Pursuing the policy that a kidney is no better than its arterial supply he has chosen, when surgery seemed indicated, to spare no effort to preserve the hydronephrotic kidney presenting a good blood supply. He thinks that we should be far more conservative about removing hydronephrotic kidneys, particularly in the younger age group, than has been the custom.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

70:1-108 (March) 1947

General Principles of Nervous Activity (Hughlings Jackson Lecture). E. D. Adrian.—p. 1.
*Prefrontal Leukotomy: Neuroanatomic Report. A. Meyer, E. Beck and T. McLardy.—p. 18.
*Disease of Nervous System Occurring Among Research Workers on Swayback in Lambs. A. M. G. Campbell, P. Daniel, R. J. Porter, W. R. Russell, H. V. Smith and J. R. M. Innes.—p 50
Some Physical Aspects of Encephalography E. G. Robertson.—p. 59.
Selection and Use of Autografts for Bridging Gaps in Injured Nerves. S. Sunderland and L. J. Ray.—p. 75.
On the Notion of the "Discrete Movement": A Critical Note. F. M. R. Walshe.—p. 93.

Neuroanatomic Report on Prefrontal Leukotomy.—In a paper published in 1945 Meyer and his associates dealt with the therapeutic and psychiatric aspects arising out of prefrontal leukotomy. In the present review they deal exclusively with neuroanatomic investigations carried out on patients dying at various intervals after prefrontal leukotomy. The report is concerned with 7 leukotomized and 1 lobectomized human hemispheres.

Disease of Nervous System Occurring Among Workers Investigating Swayback in Lambs.—According to Campbell and his associates swayback is a paralytic disease of newborn and young lambs which occurred in many parts of Britain. The symptoms consist of ataxia and paralysis, the lambs either walking with a staggering gait or being completely paralyzed and unable to rise. The pathology is a symmetrical cerebral demyelination and degeneration of the motor tracts. Four of 7 persons who worked intensively on the demyelinating disease known as swayback in lambs developed a disease of the central nervous system clinically indistinguishable from disseminated sclerosis. This might be due to a heretofore unidentified occupational hazard of chemical research workers or it might also indicate that there is some causal connection between swayback and disseminated sclerosis, and some consideration has been given to speculation along these lines, viz. to some common infective agent acting only in the presence of a trace element deficiency. As swayback is a demyelinating disease and can be prevented by copper therapy, it is apparent that trace element deficiencies should be considered in connection with analogous diseases of man.

British Medical Journal, London

1:627-666 (May 10) 1947

Some Problems in the Titration of Streptomycin. J. R. May, A. E. Voureka and A. Fleming.—p. 627.
Physical Health of Children Attending Day Nurseries: Report to Day Nurseries. Committee of the Medical Women's Federation. Margaret E. McLaughlin.—p. 631.
*De Morgan's Spots. A. R. Murison, J. W. Sutherland and A. M. Williamson.—p. 634.
Relapsing Fever in Cyrenaica. N. F. Coghill, J. Lawrence and I. D. Ballantine.—p. 637.
Two Cases of Ferrous Sulfate Poisoning. J. Thomson.—p. 640.

De Morgan's Spots.—According to Murison and his associates the minute round ruby colored macules known as De Morgan's spots are of common occurrence in adults. They are most often seen in the skin of the abdominal wall. They vary in size up to a diameter of about 5 mm. and in number up to twenty or occasionally more. Microscopically they have the character of simple hemangiomas. The authors discuss a possible connection with cancer. In order to obtain more data on the incidence and significance of these spots they studied their occurrence in 1,300 patients at three Glasgow hospitals. No difference was found in sex incidence. The proportion of hospital patients with ruby spots rises from 5 per cent in adolescence to about 75 per cent at 70 years of age. The spots also increased in number and size with advancing age, but their rate of growth decreased. De Morgan's spots were slightly commoner in malignant than in nonmalignant disease but not sufficiently so to be of diagnostic importance.

Edinburgh Medical Journal, London

54:129-188 (March) 1947

Evolution, Function and Scope of the Medical Society. E. Bramwell.—p. 129.
Surgery in Japanese Prison Camp on Singapore Island. J. A. P. Cameron.—p. 140.
Viral Infections of Chick Embryo Respiratory Tract: I. Control Observations. J. H. Fodden.—p. 151.
Treatment of the Deaf: Hearing Aids and Their Modern Conception. G. E. Martin.—p. 158.
Operative Treatment of Nonsuppurative Middle Ear Deafness. I. S. Hall.—p. 167.
Periarteritis Nodosa.—p. 171.
Some Practical Considerations in Surgery of Hand and Fingers. E. L. Farquharson.—p. 175.

Indian Medical Gazette, Calcutta

82:47-112 (Feb.) 1947. **Partial Index**

*Postmortem Appearances in Tropical Eosinophilia. R. Viswanathan.—p. 49.
Foreign Body Localization: Ring Method. E. J. Somerset.—p. 50.
Cause, Symptoms and Treatment of Lathyrism: Specific Nutritional Neuropathy. H. Jacoby.—p. 53.
Male Hormones for the Prevention of Relapses in Malaria. S. J. Gross.—p. 65.
Paul-Bunnell Test in Diagnosis of Glandular Fever, with Report of 7 Cases. D. W. Soman.—p. 69.

Postmortem Aspects of Tropical Eosinophilia.—Viswanathan says that since there have been no deaths from tropical eosinophilia the pathologic aspects of the condition have been a matter of speculation. He made postmortem studies on a man aged 28 who died of arsenical encephalopathy after the second injection of neoarsphenamine. The microscopic appearances in this case were suggestive of an infective process rather than an anaphylactic reaction. The lesions are peribronchial and not perivascular. The microscopic changes suggest that infection in tropical eosinophilia is probably by inhalation and that the infecting agent gets into the peribronchial tissue and sets up an inflammatory process involving the interstitial tissue mainly and alveoli partially. Discrete scattered areas of cellular infiltration, monocytic and eosinophilic, are produced. When the process becomes chronic, nodules containing giant cells and monocytes are formed. The disseminated mottled shadows seen in the x-ray films of cases of tropical eosinophilia and which last only for a short period are probably due to the areas of cellular infiltration with monocytes and eosinophils. In some cases the mottling lasts for months. In them the shadows might be due to the presence of giant cell nodules.

Journal of Mental Science, London

93:1-200 (Jan.) 1947

Intelligence as a Social Problem. F. C. Bartlett.—p. 1.
Ten Years' Experience of Insulin Therapy in Schizophrenia. R. K. Freudenberg.—p. 9.
Personality Changes After Leukotomy. E. L. Hutton.—p. 31.
Fear Factors in Flying Personnel. W. A. S. Falla.—p. 43.
"Creative Spell" of Schizophrenics After Leukotomy. F. Reitman.—p. 55.
Depersonalization Syndrome. G. T. Stockings.—p. 63.
*Nature and Treatment of "Writer's Cramp." M. Narasimha.—p. 68.
Intelligence of Male Noninstitutional Epileptics of Military Age. J. G. Sheps.—p. 82.
Intensive Electrical Convulsion Therapy in Acute Mania. F. T. Thorpe.—p. 89.
Concept of "Psychopathy" and Treatment of So-Called "Psychopaths." O. Kinberg.—p. 92.
Methods of Officer Selection in the Army. S. W. Gillman.—p. 101.

Writer's Cramp.—Narasimha says that writer's cramp, graphospasm or mogigraphia may be defined as a condition of incoordination of the small muscles of the hand which appears only when one attempts to write. The various names given to this condition emphasize that cramp or spasm is the predominant feature. As the principal nerves and muscles are often intact and movements of a wider range can be carried out efficiently, the condition appears to be a functional disturbance of coordination. Among the etiologic factors, overwork and excessive use of the hand for writing have been stressed. Janet includes the condition among the symptoms of "psychasthenia." Strümpell pointed out that this condition was often associated

with a nervous constitution and that neurasthenic symptoms were often present in persons suffering from writer's cramp. The author found that 171 out of 1,880 (or approximately 1 in 11) patients suffering from neuropsychiatric conditions showed some incoordination of the muscles of the hand resulting in writing disturbances. Those in whom the tremulous form of writing was found had acute and severe anxiety neurosis. Those in whom the spastic or cramped form of writing was found, as well as those who showed the ataxic or jerky form of writing, had neurosis with hysterical reactions. Those who showed the paralytic form of disturbance, characterized by slovenly and almost illegible writing, were suffering from organic disease of the central nervous system. The term "writing disturbance" has been suggested instead of the name "writer's cramp."

Lancet, London

1:583-622 (May 3) 1947

Foundations of Academic Freedom. M. Polanyi.—p. 583.
*Antithyroid Activity of Ergothioneine: Normal Component of Blood. A. Lawson and C. Rimington.—p. 586.
Results of Parallel Kahn and Wassermann Tests in Relation to Penicillin Therapy of Syphilis. J. F. Heggie, J. G. Maguire, M. M. Bull and R. M. Heggie.—p. 588.
*Pethidine Addiction. P. Polonio.—p. 592.
Distribution of Penicillin in Eye After Subconjunctival Injection. G. W. S. Andrews.—p. 594.
Multiple Pressure Vaccination. R. H. Mole.—p. 597.
Unusual Cause of Irritative Median Neuritis in Hand. P. D. Bedford. —p. 597.

Antithyroid Activity of Ergothioneine.—Lawson and Rimington point out that the discovery of the goitrogenic action of thiourea has led to an investigation of the activity of many types of thiol compounds. Thiouracil and its more active propyl derivative have been proved valuable in the treatment of hyperthyroidism, but these drugs have the disadvantage of producing toxic symptoms such as agranulocytosis. Since all the symptoms heretofore tested have been products foreign to the animal body, it was felt that ergothioneine, a normal constituent of blood, which belongs to the same chemical type, would be worthy of investigation. Ergothioneine is methyl betain of 2-thiolhistidine. The ergothioneine used in this work was isolated from ergot of rye. It was observed that when ergothioneine was administered subcutaneously to rats it exerts an antithyroid activity comparable with that of thiouracil. The possibility of using ergothioneine as a therapeutic agent which might be less likely than the synthetic compounds to produce toxic symptoms comes to mind, and this aspect of the problem is receiving attention.

Meperidine Hydrochloride (Demerol) Addiction.—Polonio says that in 1944 he and Barahona collected 17 cases of meperidine addiction from the literature with 3 deaths and presented 6 cases of their own with 1 death. Since then he has observed 9 more cases of meperidine addiction with 1 death. He stresses that the therapeutic use of meperidine can be the source of dangerous addiction and that it should be used with the same precautions as are required with morphine. Special care must be observed with certain personalities of the psychopathic type. Tolerance and physical dependence are easily acquired. Symptoms of intoxication are frequent and severe and may be cause of death. In 32 reported cases there were 5 deaths. Though the physical dependence and abstinence symptoms are not so intense as with morphine, the quicker habituation and more serious intoxication effects may well make meperidine a more dangerous drug.

1:623-658 (May 10) 1947

Backache. B. H. Burns and R. H. Young.—p. 623.
*Streptomycin in Experimental Plague. D. Herbert.—p. 626.
Clicking Pneumothorax. A. P. Thomson.—p. 630.
*Hypopituitarism, Hypogonadism and Anemia Treated with Testosterone. G. Watkinson, W. H. McMenemey and G. Evans.—p. 631.
Use of Curare in Electric Convulsion Therapy. J. F. Donovan.—p. 634.
Treatment of Tropical Sprue with Folic Acid. R. J. G. Morrison and C. R. St. Johnston.—p. 636.

Streptomycin in Experimental Plague.—Herbert says that streptomycin has given good results in the treatment of tularemia. Streptomycin inhibits the growth of the plague bacillus in vitro and in certain concentrations brings about rapid sterilization of plague cultures. In mice infected subcutaneously with a highly virulent plague strain, in dosage sufficient to kill 100 per cent of control animals, two and one-half day courses of streptomycin injections (800 units a day) at once and twenty-four and forty-eight hours after infection gave 85, 60 and 5 per cent survival. A dosage of 1,600 units a day for three and one-half days gave better results. In guinea pigs infected by subcutaneous injection, three and one-half day courses of streptomycin injections (40,000 units per kilogram daily) gave 100 per cent survival, even when dosage was delayed for forty-eight hours after infection. Streptomycin is equally effective in the treatment of artificially induced pneumonic plague in both mice and guinea pigs. Penicillin and sulfathiazole also inhibit the growth of Pasteurella pestis, which in vitro appears more sensitive than most gram negative organisms to these drugs. In comparative tests in infected mice, however, streptomycin was considerably more effective than sulfathiazole, and penicillin was only slightly effective even in very high dosage.

Hypopituitarism, Hypogonadism and Anemia Treated with Testosterone.—Watkinson and his associates point out that the pituitary plays a part in hemopoiesis, polycythemia being associated with basophilism, and anemia with hypopituitarism. The 2 cases of hypopituitarism and hypogonadism described here are unusual in that the associated anemia was resistant to treatment with liver, thyroid or iron but responded dramatically to injections of testosterone propionate. These 2 patients were men of 20 and 52. In the belief that testosterone might benefit other refractory anemias it was administered to 2 other patients whose anemia had proved resistant to treatment but in whom no evidence of pituitary or gonadal deficiency was present. The drug failed in these patients to have any persistent beneficial effect, confirming that it would be effective only in the presence of gonadal deficiency. The drug induced a temporary remission in 1 case, suggesting that it is worth a trial in refractory anemias, especially if associated with a hypocellular marrow. The evidence produced shows that hypogonadism may be important in the production of anemia, and testosterone may have a good effect in cases of this type.

Medical Journal of Australia, Sydney

1:449-480 (April 12) 1947

Adaptation of Military Scrub Typhus Mite Control to Civilian Needs. R. N. McCulloch.—p. 449.
Diagnosis and Treatment of Anxiety States. W. E. Wilson.—p. 452.
Application of the Dermatome in Plastic Surgery. B. W. B. Riley. —p. 461.

Practitioner, London

158:377-452 (May) 1947. **Partial Index**

Eyestrain. S. Duke-Elder.—p. 377.
Cataract. H. B. Stallard.—p. 383.
Infections of the Eye. T. C. Summers.—p. 394.
Treatment of Intraocular Foreign Bodies. W. J. W. Ferguson.—p. 400.
Contact Lenses. A. G. Cross.—p. 407.
Mydriatics: Some Developments. A. D. MacDonald.—p. 413.
Serum Phosphatases and Their Significance. L. M. Shorvon and Ruth Pearson.—p. 418.

158:453-524 (June) 1947. **Partial Index**

Modern Views on Causation of Hypertension. C. Wilson.—p. 453.
Surgical Treatment of Hypertension. J. R. Learmonth.—p. 461.
Medical Treatment of Hypertension. T. East.—p. 467.
New Anti-Histamine Drugs in Relation to the Histamine Theory of Allergy. D. Harley—p. 482.
Diagnosis of Dyspepsia. T. H. Oliver.—p. 489.

Tubercle, London

28:63-84 (April) 1947

Some Clinical and Pathologic Aspects of Tuberculosis of Central Nervous System. H. V. Smith and P. Daniel.—p. 64.

28:85-106 (May) 1947

Survival of Sputum-Positive Consumptives: Study of 1,192 Cases in a County Borough Between 1914 and 1940. W. H. Tattersall.—p. 85.
Towards Fluorescence Microscopy. D. B. Cruickshank.—p. 97.
A County Medical Officer Looks at Tuberculosis. K. Fraser.—p. 100.

Presse Médicale, Paris

55:261-274 (April 19) 1947

*Reflex of Rossolimo. L. Rimbaud, H. Serre and P. Passouant.—p. 261.
Lumbodorsal Sympathectomy of R. Smithwick. J. Patel.—p. 262.
Case of Primary Cancer of Liver in Girl of 3½ Years. C. N. Andriotakis and M. J. Cambylafka.—p. 363.

Reflex of Rossolimo.—According to Rimbaud and his co-workers the first description of the reflex under consideration was given in 1902 by Rossolimo, who designated it as a "deep reflex of the great toe" which is elicited by percussion of the plantar surface of the great toe in the presence of a lesion of the pyramidal bundle. Later the study of the reflex was extended to other toes. Rimbaud and his co-workers studied the reflex in various forms of hemiplegia and emphasize that it is a deep reflex resulting from an interoceptive excitation. As such it differs from cutaneous reflexes resulting from exteroceptive stimulation as does the Babinski sign. The authors conclude that Rossolimo's toe flexion reflex is obtained by plantar percussion of the intrametatarsophalangeal space. It is a latent tendinous reflex which appears in the course of a lesion of the pyramidal tract, particularly in its medullary course. It is a sign of the onset of multiple sclerosis appearing before Babinski's sign, and it may be the only manifestation of a pyramidal lesion.

Sang, Paris

17:555-626 (No. 9) 1946

Blood Transfusion in U. R. S. S. A. Bagdasarov.—p. 555.
*Distribution of Rh Group in France: Report on 15 Cases of Hemolytic Disease in Newborn. A. Tzanck and M. Bessis.—p. 558.
Biochemical Problems of Hemopoiesis. A. Aschkenasy.—p. 562.
Cytology of Blood in Imago of Forficula Auricularia L. Lucie Arvy and M. J. Lhoste.—p. 596.
Anemia Caused by Lead in Rabbits: II. Iron in Anemia Caused by Lead in Rabbits. Mrs. I. Moday and P. Chiron.—p. 603.
*Value of Determination of Hemoconcentration with Regard to Diagnosis, Prognosis and Therapeutic Indications in Shock During War. P. Royer and J. Barbizet.—p. 609.

Distribution of Rh Group in France.—Tzanck and Bessis studied fifteen erythroblastic families and found that 14 of the 15 mothers had Rh-negative blood and the one woman who was Rh positive was of the Rh_2 type and had an agglutinin anti-Rh_2 in her serum. The husbands of these women and their children had Rh-positive blood. Eleven of the 15 mothers of newborn infants with hemolytic disease had anti-Rh agglutinins in their serum; 7 of them had a standard anti-Rh agglutinin (delta); 1 had an anti-Rh_2 (H) agglutinin and 1 had a standard anti-Rh agglutinin in incomplete form (delta[1]) and 2 had a mixture of anti-Rh and anti-Rh_1 (gamma + delta) agglutinins. This study demonstrated that statistics of Rh groups among the French white population are similar to those of the white population in England and in the United States. So far only two of the five types of antiserum discovered in the latter countries proved usable in the fifteen families studied. The other three types of antiserum are rare.

Hemoconcentration in Shock.—Royer and Barbizet failed to demonstrate hemoconcentration either on single or on repeated hematologic examination of 28 wounded soldiers with shock. These soldiers had sustained wounds of the abdomen, thorax, extremities, face and neck. There was no relationship between the intensity of the shock and the concentration of the red blood corpuscles. In 3 of the wounded a concentration of red blood corpuscles slightly above the normal and a relatively increased arterial tension were in contrast to the clinical symptoms of definite shock and the fact that these soldiers had suffered severe loss of blood. They very likely presented a posthemorrhagic reflex polyglobulism associated with contraction of the spleen. Hemoconcentration is an insufficient aid to diagnosis of shock and may even lead to an erroneous diagnosis because of the fact that wound shock differs definitely from histamine shock. Systematic studies of hemoconcentration in shock may be omitted, while pulse and arterial tension determinations are decisive in estimating the required amount of fluids. The choice between plasma and blood is to be based on the nature of the wound, on the importance of the hemorrhage and on the actual availability of blood and plasma.

Helvetia Medica Acta, Basel

12:1-140 (May) 1945

*Traumatic Thrombosis of Splenic Vein: Clinical and Pathologic Aspects. K. Teil.—p. 3.
Spontaneous and Experimental Glomerulonephrosis. H. U. Zollinger.—p. 23.
Chronic and Acute Myelosis. B. Jasiński and O. Roth.—p. 59.
Fatigue and Exhaustion of Individual Muscle. O. Riesser.—p. 119.
Relation Between Cell Structure and Carbohydrate Metabolism. O. Riesser.—p. 131.

Traumatic Thrombosis of Splenic Vein.—Geiser and Studer say that although the symptomatology of thrombosis of the splenic vein shows considerable uniformity, there are numerous etiologic factors, among which trauma is infrequent. In the case under consideration a fall from a ladder on the left side was the traumatic cause. Diagnosis proved difficult because of the absence of esophageal varices. The epinephrine reaction, the leukothrombopenia, the history of the trauma and the formation of a collateral circulation in the left side of the abdomen facilitated a correct diagnosis. Differentiation from thrombosis of the portal vein was not definite. Since clinical symptoms had persisted from the time of the trauma to the roentgenologic demonstration of the splenic tumor, twenty-two days later, the trauma seemed established as the causal factor, although trauma is a rare cause of thrombosis of the splenic vein. Splenectomy is advisable in case of hemorrhages from esophageal varices or if the size of the splenic tumor causes complaints. However, if extensive varices develop in the splenic region of the abdominal wall, ligation of the splenic artery is to be preferred to splenectomy; this is the case also in the presence of extensive adhesions of the spleen.

Revista Paulista de Medicina, São Paulo

30:75-126 (Feb.) 1947. **Partial Index**

*Myoma of Uterus and Arterial Blood Pressure. A. Wolff Neto, J. Hamermesz and N. A. Salum.—p. 75.

Uterine Myoma and Hypertension.—Observations on a group of white and a group of Negro women between the ages of 20 and 60 with myoma of the uterus (198 patients) and without uterine myoma (120 patients) revealed that hypertension and myomas of larger size were more frequent in Negro women than in white women. The incidence of hypertension in white women was the same for those with and without myoma, whereas in Negro women it was greater for those with myoma. Regardless of race, hypertension was more frequent and more intensified in women having myomas of large size than in those having myomas of medium or small size. Larger myomas were encountered in Negro women.

Acta Medica Orientalia, Jerusalem

6:67-116 (March) 1947

Laboratory Aspect of Fungus Diseases of the Skin and Hair. F. Sagher.—p. 68.
Psoriasis: Study on Problem of Occurrence of Psoriasis in Hot Climate. J. Tas.—p. 79.
Problems of Moniliasis. F. Raubitschek.—p. 85.
Recurrent Verrucous Leishmaniasis of Skin (Oriental Sore). L. Steinhauer.—p. 91.
Specific Treatment (Antisyphilitic) in Cases of Habitual Abortion, Missed Abortion, Partus Prematurus and Stillbirth. A. Sadovsky and S. Kaplan.—p. 95.
*New Quick Method for Staining Treponema Pallidum. H. A. Cohen.—p. 99.
*Ectodermosis Erosiva Pluriorificialis Due to Phenobarbital: Report of 3 Cases. C. Berlin.—p. 101.
Excessive Reactibility to Sandfly Bites. S. Gill.—p. 104.
Pemphigus and Allied Conditions: A Review. M. Michael.—p. 106.

Quick Staining Method for Treponema Pallidum.—Since available Treponema pallidum stains are not suitable for the practitioner's office, Cohen describes the requirements of such a technic and outlines one which has advantages owing to the greater ease and rapidity with which it is performed and the greater reliability of results. The serum must be spread in a thin film, and fixation is done by covering the slide with a 36 to 40 per cent solution of formaldehyde with subsequent heating until evaporation is noted. The slide is then flushed with distilled water. For staining Cohen employs 4 drops of a solution consisting of equal parts of normal sodium hydroxide and tenth normal sodium hydroxide, 2 drops of a 5 per cent

solution of iron chloride, 4 drops of normal hydroxylamine hydrochloride and 3 drops of a 10 per cent solution of pyrogallic acid. The slide is then heated until bubbles appear under gentle stirring. This is followed by flushing with distilled water, after which a few drops of an ammoniacal solution of silver nitrate in 0: 5-5 per cent solution are added. After a few seconds staining is complete. The slide is then washed with distilled water and air dried. Under the microscope the treponemes display a reddish brown color on a light background in artificial light. It is important that none of the solutions required need be freshly prepared. The entire process takes only one minute.

Ectodermosis Erosiva Pluriorificialis Due to Phenobarbital.—According to Berlin phenobarbital produces exanthems which are mostly morbilliform or scarlatiniform in about 3 to 4 per cent of patients. Another type of reaction is the severe variant of erythema multiforme accompanied with fever and involvement of the mucous membranes and generally known as ectodermosis erosiva pluriorificialis (Rendy-Fliesinger). In 1 of the 3 cases of ectodermosis erosiva pluriorificialis a patch test with a 20 per cent solution of the drug elicited a slightly positive reaction. In 2 cases the intracutaneous test with a solution of 2 per cent was strongly positive. The diminishing of the reaction after repeated and increased oral test doses in 1 case speaks for the possibility of a specific desensitization.

Acta Medica Scandinavica, Stockholm

127:1-192 (March 22) 1947. **Partial Index**

*Familial Leukemia: Preliminary Report. A. Videback.—p. 26.
*Case of Calcinosis Universalis. H. Lebel and A. Randløv-Madsen.—p. 53.
Spontaneous Hypoglycemia, with Special Reference to Diagnosis of Hyperinsulinism. R. Luft.—p. 65.
*Symptomatology and Prognosis of Lipoid Nephrosis. H. Laake.—p. 91.
Hemopericardium—Angiosarcoma Cordis: Case of Primary Heart Tumor Diagnosed Intra Vitam. H. F. Lange and T. Christiansen.—p. 107.
*Curative Effect of Pure Duodenal Secretion from Swine in Cases of Pernicious Anemia. E. Landboe-Christensen and C. L. S. Bohn.—p. 116.
Keratoconjunctivitis Sicca in Cases of Rheumatoid Arthritis. T. Stenstam.—p. 131.
Studies of Infectious Mononucleosis. E. Klemola.—p. 149.

Familial Leukemia.—According to Videback observations of familial leukemia have grown so numerous that one cannot rule out factors of heredity as contributory causes of the disease. This theory receives support from the observation of leukemia in identical twins and the occurrence of leukemia in successive generations and in 3 or 4 members of the same family. The author was able to detect 11 instances of familial leukemia. The familial occurrence of leukemia was 7.6 per cent of all the cases, that is, it was as frequent as that of pernicious anemia. As regards the relative frequency of the different forms of leukemia, the familial cases show the same distribution as a nonselected material, and on an average familial leukemia manifests itself at an earlier age than leukemia in general. These circumstances indicate that familial leukemia is, at least partly, of hereditary origin, and that its occurrence depends on a common leukemic gene. The manner in which this gene is inherited is as yet unelucidated, but irregular dominance is most likely.

Calcinosis Universalis.—The patient with calcinosis universalis presented by Lebel and Randløv-Madsen was a girl aged 9. The disorder had lasted about four years. Severe contractures and huge lime salt deposits had developed around the large joints. An attempt was made to influence the lime salt deposits by means of an alkalizing treatment consisting in giving large quantities of sodium citrate by mouth. The treatment had no effect. The rarity of calcinosis universalis is indicated by the fact that only about 80 cases have been reported since 1877. It is most frequently observed in childhood and early adolescence.

Symptomatology and Prognosis of Lipoid Nephrosis.—In order to get an idea of the prognosis of lipoid nephrosis, Laake made follow-up studies on patients who had presented the picture of lipoid nephrosis while under hospital observation. At the time of hospitalization all of them had manifest edemas, and 7 were found to have hydrothorax and/or ascites. There also were found hypoproteinemia, inversion of the albumin/globulin ratio, hypercholesterolemia, hypocalcemia and normal xanthoprotein values. Thirteen of the 16 patients were investigated. Two of these had become free from symptoms after an illness lasting four months and one and one-half years. The length of the observation time for these patients was five and fifteen years, respectively. Both of them were 11 years old when the disease first appeared. Six of the patients reexamined still presented symptoms of the renal disease, 4 had died of chronic glomerulonephritis with uremia and 1 had died of cardiac infarction. Microscopic examination of the kidneys also revealed changes typical of chronic glomerulonephritis. The author concludes that adults who present the clinical picture of lipoid nephrosis really have a chronic glomerulonephritis, which in many cases has a more protracted and benign course than what is usually seen.

Curative Effect of Duodenal Juice of Swine in Pernicious Anemia.—Landboe-Christensen and Bohn were able to collect from a hog with a pouch and fistula arrangement large quantities of pure duodenal juice. They tested the possible efficiency of this secretion in pernicious anemia. Treatment with the duodenal juice was first tried on a man aged 83, with negative results. The authors obtained a curative effect in a previously untreated case of pernicious anemia; the patient was given ten daily doses of 150 cc. of pure duodenal juice. The bone marrow reacted in the typical way. Discrepancies between this observation and the experiments of Castle, Townsend and Heath may find an explanation in the fact that the duodenal secretions in man and in swine may differ regarding their anti-pernicious anemia effect, but a relationship between pernicious anemia in man and the duodenoprival anemia in swine seems to have been established.

Nordisk Medicin, Gothenburg

33:603-674 (March 7) 1947. **Partial Index**

Contrast Mediums for Cholecystography: Review of Literature. H. Heiwinkel.—p. 603.

Hospitalstidende

Steatorrhea Arthropericarditica: Report of Case Together with Review. J. Clemmesen.—p. 607.

Norsk Magasin for Lægevidenskapen

Fifteen Years' Abortion Material, with Special Regard to Treatment. O. W. Tenfjord.—p. 615.
*Acute Anterior Poliomyelitis in Pregnancy. R. Grelland.—p. 620.

Hygiea

Nature of Stimulant of Sympathetic. U. S. v. Euler.—p. 629.
Effect of Pyridoxine Hydrochloride (Vitamin B6) in Paralysis Agitans and Postencephalitic Parkinsonism. Endla Hiielo.—p. 632.

Svenska Läkaresällskapets Förhandlingar

*Animal Experiments and Pathanatomic Observations in Man on Function of Parathyroids. Å. Wilton.—p. 658.
Physiology and Pathology of Parathyroids. N. Törnblom.—p. 661.

Acute Anterior Poliomyelitis in Pregnancy.—Grelland describes the course of acute anterior poliomyelitis in pregnancy observed in Ullevål Hospital in 10 patients aged from 20 to 41. Of the 6 patients given respirator treatment the 4 in the last three months of pregnancy died. Four healthy children were born, in 1 instance by cesarean section. There was 1 abortion, and in 1 case the pregnancy is not yet terminated but the prognosis is favorable. Microscopic examination of mother and child in 2 instances showed extensive lesions in the spinal cord and medulla oblongata in the mothers, while the nervous system appeared to be normal in the fetuses. Of 58 cases of poliomyelitis in pregnancy reported in Scandinavian literature, including the 10 here reported, 29, with 1 death, occurred in the first six months of pregnancy and 29, with 14 deaths, in the last three months of pregnancy. The deaths were due to respiratory paralysis. In 4 cases the result of the pregnancy is not known. In 3 cases delivery was by cesarean section, in 32 it was spontaneous; 30 healthy children were born. Grave paralysis of the lower extremities and abdominal musculature does not affect the course of delivery. Respiratory paralysis in the last three months of pregnancy is considered an indication for immediate cesarean section.

Animal Experiments and Histologic Observations on Function of Parathyroids in Man.—Wilton concludes that hypercalcemia in hyperparathyroidism occurs because the hormone excess in some way leads to dedifferentiation of mature bone cells with consequent dissolution of precipitated calcium salts. Hyperparathyroidism in osteitis fibrosa generalisata seems in most cases to depend on an intermittent irritation of the parathyroid parenchyma. This irritation may possibly originate from the hypophysis.

Book Notices

Recent Progress in Hormone Research: Proceedings of the Laurentian Hormone Conference. Volume I. Edited by Gregory Pincus. Cloth. Price, $7.50. Pp. 399, with illustrations. Academic Press Inc., 125 E. 23d St., New York 10, 1947.

The Laurentian Hormone Conference, the successor to the Gibson Island Hormone Conference, has established a reputation for scientific excellence although only three annual meetings have been held. Sharply restricted in its membership, the proceedings of this conference have not been available to those not fortunate enough to be invited to participate, except through widely scattered publications in which part of the material given at one of the conferences is presented.

Under the able editorship of Dr. Pincus, the entire proceedings, including discussions, of the 1946 conference have been gathered together. The papers, although dealing with highly specialized topics in hormone chemistry and physiology, should, by the excellence of presentation and their authoritative authorship, find wide acceptance among all scientists interested in endocrinology.

The proceedings are divided into four parts, the first dealing with neurohumoral relationships. In this section David Nachmansohn summarizes the knowledge of the role of acetylcholine in the mechanism of nerve activity, and Frank A. Beach gives a fascinating discussion of the role of hormones in the mating behavior in vertebrates. The second section, dealing with the chemistry and physiology of adrenal hormones, is the most technical in the book, and those who can read it profitably are undoubtedly limited in number. Papers by E. C. Kendall, T. F. Gallagher, C. N. H. Long and Gregory Pincus discuss various aspects of the synthesis and actions of the adrenal cortical steroids.

The role of hormones in metabolic processes is ably discussed by Leo T. Samuels, C. D. Kochakian and W. U. Gardner in the third section. Of interest to clinicians are the excellent discussions of various aspects of clinical endocrinology in the fourth part of the book. Ira T. Nathanson presents a masterly discussion of the role of endocrines in human cancer; Fuller Albright brings up to date our knowledge of the effect of hormones on osteogenesis; Nathan B. Talbot and Edna H. Sobel discuss growth in children and the endocrine factors influencing this process; and Arthur Grollman gives a well balanced picture of our knowledge of the endocrine aspects of experimental renal hypertension.

This book, although of greatest interest to the experimental endocrinologist, can be read with profit by biochemists, physiologists and clinicians who seek authoritative information concerning the newer knowledge of hormones.

A Handbook of Commonly Used Drugs, Including Certain Measures for the Control of Diseases Peculiar to the Tropics of the Western Hemisphere. By Michel Pijoan, B.A., M.D., Director, The Chemical Foundation Laboratory, University of Colorado, Boulder, Colorado, and Clark Harvey Yeager, M.D., Dr.P.H., Chief of the Medical Section, Health and Sanitation Division, Office of Inter-American Affairs, Washington, D. C. Cloth. Price, $3.75. Pp. 198. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1947.

This book cannot be recommended for students or physicians. There are now available so many books on drugs that there would seem to be little excuse for new ones unless they provide a real contribution. The authors have attempted to provide a small book apparently for occasions "when reference material for drug research is difficult to obtain"; they state that it "is not designed to replace the standard texts in Pharmacology but rather to act as an adjunct and a guide in conditions where such texts are relatively unavailable." Unfortunately, what is offered cannot be considered adequate even as an adjunct and certainly not as a guide. Such important subjects as diuretics are dismissed in two and one-half pages, female sex hormones in one and one-half pages, cathartics with one page and emetics and expectorants with one page. The book is already dated, as there is no mention of newer substances such as "tridione," thiouracil and propylthiouracil, and "promin" for leprosy; the discussion on folic acid is limited to eleven words in a chapter on nutritional factors and omitted entirely from the chapter on hematologic agents. Only diethylstilbestrol seems to be mentioned as a synthetic estrogenic substance and then under the name "stilbestrol," a name which has been discontinued for some time. Furthermore, there are statements which are contrary to the consensus of those informed in the respective fields. For example, strychnine is offered as a stimulant for barbital poisoning, "dilaudid" is claimed to be better than the other opium derivatives, "anthallan" is given a favorable recommendation for pruritus, allergic dermatoses and infantile eczema, and "atabrine" is "now the drug of choice in treating malaria." The authors claim that "the synthetic product desoxycorticosterone has placed the use of cortical extracts in second place. The synthetic product is more effective, more potent, and can be assayed quantitatively." And for agranulocytosis, "pentnucleotide" "may cause a remarkable improvement within forty-eight hours." This is an unusual statement in view of the fact that pentnucleotide has been supplanted as an effective agent for agranulocytosis and the informed workers are now agreed that penicillin is the most effective substance.

Considering the small amount of space that is devoted to drugs, one wonders why pages in this volume are taken up with discussions of tropical diseases that include manifestations, transmission, treatment and prevention, a classification of anemias, as well as a discussion of the blood bank and details of how to test for blood groups. A description of a drug is supposed to reveal what it is, how it works, what it is good for, the dosage and any specific properties that may be of value to the physician, such as incompatibilities and synergism. When these are presented in proper sequence, with sufficient explanation and offered with true statements, the reader will have a worth while book as a guide, provided of course the manuscript is proofread carefully. This book even lacks careful proofreading; obvious mistakes appear on pages 5, 15 and 48.

Better Hospital Care for the Ambulant Patient. Report of the special Committee on Hospital Clinic Services. Paper. Pp. 184, with 2 illustrations. The Hospital Association of Pennsylvania, 222 N. Third St., Harrisburg, Pennsylvania, 1946.

A survey of outpatient services rendered by voluntary hospitals was conducted by the Special Committee on Hospital Clinic Services of the Hospital Association of Pennsylvania. While the survey was confined to Pennsylvania, the recommendations apply to voluntary hospitals generally. As a study of services and facilities, it is somewhat less detailed than seems necessary. Outpatient clinics and group practice clinics in connection with hospital services are considered in detail. The function of the voluntary hospital in restoring the usefulness of handicapped persons is carefully presented. The health center idea and the problem of dental care are related briefly in terms of hospital services. One is impressed by the committee's evaluation of the voluntary hospital as the center for all voluntary health services. According to the committee "the hospital of the future must not be a single, independent institution, but part of a system of health service, coordinated functionally and administratively with other agencies to provide complete health care to every part of the community." This to the committee does not mean merely provision of hospital facilities and diagnostic facilities. "From its study and investigation of the two types of clinics (diagnostic clinic and diagnostic treatment clinic) the committee is unanimous in the belief that the diagnostic clinic which does not afford treatment, while performing a valuable service for certain types of cases, is not the type of clinic which it can recommend to the serious consideration of most of the member hospitals of the association. The primary reason is that diagnostic clinics by themselves are not popular with the public and are not self supporting.

While the committee does not suggest that hospitals take over the practice of medicine, it goes to some length to show the trend toward group practice. It states that "the establishment of independent group clinics, rather than the establishment of group clinics in close collaboration with the voluntary hospitals, is not in the public interest."

In discussing the group clinics the committee recommends that "under no circumstances . . . should the hospital seek to make a profit out of the clinic." However, it adds that most of the successful group clinics "have provided funds out of the clinic's surplus earnings for the construction of enlarged quarters for the clinic; for the purchase of new diagnostic equipment; for

the enlargement and reequipping of the x-ray department and laboratories of the hospital as required, and in many cases for the expansion of the bed capacity of the hospital to take care of the growing business of the clinic."

The committee lists a number of "musts" for hospitals if they are to keep up with the trend of the times. In view of these comments and to help in understanding the hospital group's view of their own future, the following excerpt is interesting: "The necessary step is to teach them (the people) to go to clinics as soon as their bodies warn them that something is wrong, so that they may be cured while they are on their feet, without loss of time at work."

Uterotubal Insufflation: A Clinical Diagnostic Method of Determining the Tubal Factor in Sterility Including Therapeutic Aspects and Comparative Notes on Hysterosalpingography. By I. C. Rubin, M.D., F.A.C.S., Clinical Professor of Gynecology, College of Physicians and Surgeons, Columbia University, New York. Cloth. Price, $10. Pp. 453, with 159 illustrations. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1947.

This book was written with a twofold purpose. The first was to present uterotubal insufflation in its completed form as a clinical, nonsurgical method of testing for tubal patency and as a therapeutic agent. The second purpose was to evaluate by means of this test the etiologic importance of obstructed uterine tubes in sterile matings. The data presented are based chiefly on the author's extensive experience with uterotubal insufflation, which began in 1919, although his studies on the use of radiopaque substances started in 1914. The book is divided into five parts, comprising (1) anatomy, pathology and physiology of the fallopian tube, (2) technic of tubal insufflation, diagnosis, (3) therapy, (4) comparison of kymographic tubal insufflation and intrauterine injection of lipiodol and other iodized oils and (5) appendix.

Supplementing the author's personal experience are data derived from replies to a questionnaire sent by Rubin on the results of 80,376 tubal insufflations. The safety of this test is proved by the fact that there were only 190 cases of pelvic infection following the 80,376 tests. Rubin says this is "an incidence of 0.0024 per cent," but this is an error. The incidence is 0.203 per cent. Only two deaths from infection were reported from the total number of insufflations performed by 371 colleagues.

This book contains an enormous amount of useful knowledge not only about every aspect of the insufflation test and the use of iodized oil for determining the patency of the fallopian tubes but also about many factors in sterility other than that which concerns the tubes. An extensive literature is reviewed, as evidenced by a list of references which occupies twenty-four pages. Rubin himself contributed forty-five papers on the subject. The illustrations and graphs are beautiful and instructive, and all are well reproduced. The book is easy to read because it is written in a delightful and modest way.

Rubin's incidence of pregnancy in his 3,200 personal cases was over 18 per cent and the reviewer's incidence was more than 17 per cent. However, even if we conservatively estimate the frequency of pregnancy after the Rubin test as only 15 per cent, at least 12,000 women became pregnant after the 80,376 Rubin tests collected by the author. The majority of these women gave birth to healthy babies. If to this number are added the many thousands of unreported successes not only in this country but also all over the world, it will be realized that Rubin's contribution represents one of the great advances in the history of medicine in the last half century.

Quantitative Clinical Chemistry Interpretations. Volume I. By John P. Peters, M.D., M.A., Professor of Internal Medicine, Yale University School of Medicine, New Haven, Connecticut, and Donald D. Van Slyke, Ph.D., Sc.D. Second edition. Cloth. Price, $7. Pp. 1,041, with 62 illustrations. The Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore 2, 1946.

Only one of a projected three volumes of the long awaited second edition of this fine reference work is as yet available. While the first edition was composed of two volumes, it was found necessary in the present edition to present the Interpretations in two volumes, and the Methods in the third.

This first volume, on interpretations, is now available, covering thoroughly the four topics energy metabolism, carbohydrate metabolism, lipid metabolism and protein metabolism. The second part, concerning carbohydrates, contains chapters on chemistry, physiology and the clinical aspects; the third portion contains chapters on lipids, steroid hormones and fat soluble vitamins; and that on protein contains the net metabolism of protein, amino acids, urea, ammonia, creatine and creatinine, and purines and pyrimidines.

Each topic is covered in a manner that allows the available evidence to be presented clearly and then interpreted, evaluated and criticized in a thoroughly scientific manner. By such means the little that is yet known with certainty about the complete course and continuity of any given phase of metabolism and the great amount left to conjecture is emphasized.

The preface states that "the bibliographies are indecently long," but it is in part because of, rather than in spite of, its completeness that this work is so valuable. The information obtained from important articles which were published as late as 1945 have been incorporated in the text.

The book contains good paper and is well bound. The illustrations are neat and clear; the subject index is well organized and appears to be quite complete.

Eksperimentalnaya endokrinologiya: Shchitovidnaya zheleza, parashchitovidnye zhelezy, podzheludochnaya zheleza, nadpochechniki, polovye zhelezy, gipofiz. [By] N. B. Medvedeva. [Experimental Endocrinology: Thyroid Gland, Parathyroid Glands, Pancreas, Adrenals, Gonads, Pituitary Body.] Cloth. Pp. 743. Izdatelstvo Akademii Nauk Ukrainskoy SSR, Kiev, 1946.

This volume, in Russian, is devoted to the consideration of the thyroid, the parathyroids, the pancreas, the adrenals, the reproductive organs and the hypophysis. The present status of our knowledge of the internal secretions of the various endocrine glands is presented in an exhaustive and critical manner. At the same time, problems requiring further investigations are pointed out. The author, herself a prolific worker in the field of endocrinology, presents her own contributions on the cellular functions of the parathyroids and the hypophysis and on the important function of the adrenal cortex in what she terms the reparative phase of carbohydrate metabolism. The isolation by the author of a "hormone of rest" in the secretion of the adrenal cortex opens up possibilities of treatment of certain asthenic states. The volume is a worth while contribution to the literature on internal secretions.

Jubilee Volume Dedicated to Emil Christoph Barell, Philosophiae Doctor, Medicinae Doctor Honoris Causa, Rerum Politicarum Doctor Honoris Causa, President of F. Hoffmann-La Roche & Co. Limited Company, on the Occasion of the Fiftieth Anniversary of His Association with the House of Roche, by the Scientific Workers of the Roche Companies. Cloth. Pp. 468, with illustrations. Hoffmann-La Roche, Inc., Nutley, N. J.; Basel, 1946.

This volume is dedicated to Emil Christoph Barell, president of F. Hoffmann-La Roche & Co., Ltd., on the occasion of the fiftieth anniversary of his association with the house of Roche. It has been compiled by the scientific workers of the Roche companies. Some of the articles are written in German, others in English. They are all concerned primarily with fundamental studies on such subjects as vitamins, antiseptics and analgesics, which are of more interest to the research worker than to the clinician. The laboratory man will probably find considerable interest in the volume because of the nature of the topics and because of his training to evaluate critically this type of material.

The Ethicon Book of Sutures for Operating Room Nurses and Others Interested in the History, Use, and Manufacture of Suture Materials. Compiled by Miriam Zeller Gross, A.B., M.A. Fabrikoid. Price, 50 cents. Pp. 200, with illustrations. Ethicon Suture Laboratories, Division of Johnson & Johnson, New Brunswick, N. J., 1946.

This book is designed for the promotion of surgical gut sutures. It is published by the Ethicon Suture Laboratories, a division of Johnson and Johnson. The most interesting and instructive part of the book occupies about a third of the text. The rest of the material is largely miscellaneous, anecdotal and historical.

Vladimir Petrovich Filtov, laureat Stalinskoy premii: Deystvitelnly chlen Akademii Nauk Ukrainskoy SSR i Akademii Meditsinskikh Nauk SSSR (Kratkiy ocherk zhizni i tvorchestva). [By] S. F. Kalfa i V. E. Shevalev. [Vladimir Petrovich Filatov: Short Sketch of His Life and Work.] Paper. Price, 3 rubles. Pp. 48, with 11 illustrations. Izdatelstvo Akademii Nauk Ukrainskoy SSR, Kiev, 1946.

This is a brief brochure on Filatov and a brief report on some of his clinical contributions.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

RHEUMATOID ARTHRITIS AND VITAMIN DEFICIENCY

To the Editor:—Can vitamin deficiency of itself cause rheumatoid arthritis or is it "only an influencing factor of the disease?" What is the present medical consensus? I ask the question because of my experience with the following case: A housewife, first seen by me on Feb. 1, 1945, had been suffering with arthritis of the hands and feet for twenty-two years, the attacks occurring at intervals of one to three months. There was no fever but much suffering from pain, sleeplessness and impaired function. Her tonsils and teeth had been removed thirteen years previously. She had been treated with diathermy and ultraviolet light without relief. Gold injections had been tried, but she was unable to tolerate them. My examination showed a typical uniform symmetrical picture of arthritis deformans of all the fingers, wrists and toes, carpal and metacarpal, tarsal and metatarsal joints with atrophy of the soft tissues, lateral subluxations and loss of function. Aside from this far advanced and incurable destruction in the extremities, the patient's general condition was fairly satisfactory. Her weight was 130 pounds (59 Kg.), height 61 inches (155 cm.), pulse 80, blood pressure 120/80. Since she had glossitis I prescribed nicotinic acid and riboflavin tablets. Within a week the arthritic attack from which she was suffering at the time of her visit ended. Two months after the beginning of the treatment she stated that she was feeling considerably better generally and had gained 5 pounds (2.3 Kg.). Without further consultation she discontinued the vitamin dosage. Towards the end of April she suffered a new arthritic attack. On May 10 I prescribed large doses of the entire B complex. Since that time, for approximately eighteen months, there have been no new attacks. Her general condition is much improved; her weight has risen to 157 pounds (71 Kg.); her sedimentation rate has dropped from 27 to 17 mm. per hour. There has been slight but noticeable recovery of function of the affected members. **Bendet Nelsen, M.D., New York.**

ANSWER.—It has never been shown experimentally or clinically that any vitamin deficiency caused rheumatoid arthritis. Large amounts of the various vitamins have been given to many patients with this disease without significant effect on the joints (Freyberg, R. H.: Treatment of Arthritis with Vitamin and Endocrine Preparations, THE JOURNAL, Aug. 8, 1942, p. 1165. Traeger, C. H.: *M. Clin. North America.* **30**:616 [May] 1946).

Minor degrees of vitamin deficiency are not uncommonly found in rheumatoid patients as they are found also in patients chronically ill from a variety of diseases. Such minor symptoms of vitamin B deficiency as mild dermatitis over elbows or knees, sore mouth and red, sore tongue may be found in arthritic patients who have anorexia, chronic indigestion or malnutrition or who have too assiduously adhered to a low calory "rheumatism diet." These lesions respond well to the administration of vitamin B complex or its components, but the articular lesions of rheumatoid arthritis have not responded significantly to the use of vitamin B or of any other vitamin preparation.

There is also no direct indication for the use of vitamins A, C, E or K in the treatment of rheumatoid arthritis. Concentrated doses of vitamin D sometimes provide a temporary sense of well being but are not curative and may be dangerous. Cases of vitamin D intoxication, some fatal, are being reported increasingly as occurring in patients with rheumatoid arthritis.

CONCEPTION AND MENSTRUATION

To the Editor:—Is it possible for coitus during menstruation to result in pregnancy and, if so, what is the mechanism of nidation? Is there any well founded objection to this practice? **M.D., New York.**

ANSWER.—Theoretically and from studies in monkeys, conception is impossible during menstruation. The reason for this is that in both monkeys and women who have a fairly regular menstrual cycle varying from twenty-six to thirty days, ovulation occurs in the midinterval between the bleeding episodes. Ovulation usually takes place about fourteen days before the next expected menses. A female egg does not live more than a few hours, and spermatozoa probably are not capable of fertilization for more than twenty-four hours; hence for pregnancy to occur the ovum and egg must meet within a maximum period of forty-eight hours. However, R. L. Dickinson (*Am. J. Obst. & Gynec.* **14**:718 [Dec.] 1927) studied the "safe period" as a birth control measure from seven different angles: (1) records of pregnancies resulting from isolated intercourse, (2) ovulation as studied at laparotomies or on removal of ovaries, (3) effect on the subsequent period of castrating irradiation given at different days of the interval, (4) studies of the age of very young embryos, (5) types of tubal contraction and alterations in epithelial layers as found in women and shown to occur in animals at egg passing time, (6) hormones in the blood at different times and (7) vaginal smears. Dickinson claimed that there was general agreement on five matters: (1) Conception can occur at any part of the month, (2) there is a definite difference between favorable and unfavorable periods, (3) the week or ten days following menstruation is the time of greatest likelihood of conception, (4) the week preceding menstruation presents the least chance of conception, averaging about 7 per cent, or in various lists 3, 6, 9, 9.3 and 10 per cent, and (5) conception during menstruation is relatively frequent, about 13 per cent. Dickinson says further that, in view of the common avoidance of intercourse during menstruation, the percentage quoted by him may indicate a lower capacity for conception than actually exists.

It is difficult to reconcile Dickinson's statements with known physiologic facts. In at least some cases in which reliance was placed on a single coitus, either the patient's memory was fallacious or she had good reason to tell an untruth. Likewise it may be possible that ova survive longer in women than in animals and also spermatozoa may be capable of fertilization for a longer time.

Except for esthetic reasons there is no objection to having intercourse during menstruation if the flow is normal in amount. However, in women who bleed profusely the practice would be pernicious.

STERILIZATION OF MORGUE IN TUBERCULOSIS SANATORIUM

To the Editor:—Will you kindly advise what is considered the best procedure for sterilizing the autopsy table and morgue floor in a tuberculosis sanatorium? **Raymond H. Goodale, M.D., Worcester, Mass.**

ANSWER.—The problem essentially involves the killing of tubercle bacilli on the autopsy table, instruments and floors of the autopsy room. It must also be remembered that the bacilli are sometimes protected by varying amounts of mucus and purulent exudate.

There are various possibilities, among which may be mentioned the sterilization with live steam, sterilization with ultraviolet light and the free use of saponated solution of cresol (lysol) or similar disinfectant. All these methods have objectionable features. The live steam may not reach every bacillus in crevices. The ultraviolet light also cannot "go around corners." In addition there is much danger of eye damage if lead goggles are not used. The lysol method is effective but greatly overdone; there can scarcely be any necessity to cover the floors with a 1 inch layer of lysol solution.

Until something better is proved by experiment the use of a form of contagious technic with a good disinfectant is indicated. The method of procedure must be more rigid than that usually employed in the autopsy room. It should approach more the technic used in the most contagious of diseases. The operators should be well gowned, should wear gloves and should wear special shoes or rubbers that can be sterilized. There should be great care not to drop any liquid material on the floors, and if any drops of blood or pus accidentally fall to the floor they should be wiped up immediately with a sponge saturated with disinfectant. The aim should be to confine all the septic material to the autopsy table, metal tables and scales, all of which can be readily cleaned with water and disinfectant. When the autopsy is completed, a properly instructed assistant or diener should wash off all the tables and instruments with water, making sure that all the washings go down the drain. Then the tools are to be put in a disinfecting solution and the tables and scales are to be gone over with sponges soaked in disinfectant. The floors are then mopped with disinfectant, care being taken not only that the floor is cleaned but that the disinfectant penetrates all cracks and crevices. When the disinfectant dries it gradually becomes concentrated, and every object is ultimately covered with concentrated solution.

The disinfectant used is of much importance. Certain ones (as mercury bichloride) are precipitated on any albuminous material and are thereby rendered ineffective. The coal tar products and related substances (phenols, cresols) have better penetrating power and are more effective. The ordinary "lysol" is good because of the added clearing properties of the soap. Certain quaternary ammonium compounds seem to offer some promise, but they must be used in rather high concentrations; an added feature is the freedom from the objectionable odor inherent in the coal tar products. Most other tuberculocidal substances are too costly. The fact is that an ideal disinfectant has not yet been found that will be effective, free from odor and inexpensive.

FEEDING OF PREMATURE INFANTS

To the Editor:—Is it the modern practice to have a mother make an effort to nurse her premature 8 month old baby, weighing 5 pounds at birth, and if the mother cannot supply sufficient milk then to supplement it with modified cow's milk? The mother is anxious to nurse her baby. Would the following be a good formula for the baby to start out on: "Straight unpasteurized cow's milk—first remove all the cream, then add sugar (but no water) and boil for about one-half hour at 150 degrees." Feed the baby 1½ to 2 ounces every two hours and three to four hour intervals at night? Is the modern conception to reduce the protein content by adding varying amounts of water and sugar to bring it up to mother's milk and to add cream slowly to bring the fat content up to that of the mother's milk? Isn't it safer and more desirable and convenient to use condensed unsweetened milk to make up the formula?

M.D., Tennessee.

ANSWER.—Breast milk is the best feeding for any premature baby. A premature infant weighing 5 pounds should be vigorous enough to nurse entirely at the breast if the mother has a sufficient milk supply. If the mother's milk is insufficient it would then be necessary to complement the breast feedings with modified cow's milk formula. This can be done either by diluting whole cow's milk with water and adding a carbohydrate such as dextrose, lactose or cane sugar up to approximately 5 per cent of the total volume, or using an already prepared commercial cow's milk feeding, either powdered or liquid, with proper dilution. The suggested feeding in the question "Straight unpasteurized cow's milk—first remove all the cream, then add sugar (but no water) and boil for about one half hour at 150 degrees" would be low in fat, and the infant would probably be hungry on such a mixture because of the low caloric value of skimmed milk. As to the intervals of feeding, such an infant could probably be fed at most every three hours, making eight feedings for twenty-four hours. On reaching 6 pounds the baby could probably be given six feedings at four hour intervals. The amount at each feeding would vary with individual infants.

A modern concept of infant feeding attempts to include a sufficient caloric value per ounce together with ample amounts of protein, fat, carbohydrates, mineral salts, water and vitamins, so that all the infant's nutritional needs for growth, development and maintenance are supplied for twenty-four hour feedings. Cow's milk contains 4 per cent protein, as against 1.5 per cent protein in breast milk; dilution with water reduces the protein content of cow's milk but also reduces the carbohydrate content, which at 4 per cent lactose is originally lower than the 7 per cent lactose of breast milk; adding up to 5 per cent carbohydrate brings the caloric value of cow's milk formula up to that of breast milk. There is no reason for skimming the cow's milk or adding extra cream.

The final query dealing with condensed unsweetened milk is not clear. Condensed milk is fresh milk which has been heated for a considerable period, and carbohydrate added for a preservative. Evaporated milk is fresh milk which has been heated so that approximately one-half the volume of water has been removed and no carbohydrate has been added. The term condensed unsweetened milk used in this question probably applies to the modern term evaporated milk, which can be used as a source of cow's milk for the infant's formula. When evaporated milk is used, more water must be added to bring the cow's milk back to its original content, and an additional amount of water used for dilution.

Finally, when cow's milk formula is used in addition to breast milk, the term "complemental feeding" is used for the cow's milk formula from the bottle given directly following a breast nursing. The term "supplemental feeding" is used when the breast feeding is entirely omitted and the infant is given only the bottle formula.

BURNING SENSATION OF TONGUE

To the Editor:—I have in the past two years seen 2 patients, a woman of 60 and a man of 52, whose chief complaint is a burning sensation of the tip of the tongue. There is nothing visible on inspection. Both patients are perfectly normal in other respects. Vitamin deficiency has been ruled out and yet vitamin therapy did not lead to any improvement in their symptoms. Gallbladder disease has also been ruled out.

A. M. Spindler, M.D., New York.

ANSWER.—A burning sensation may occur in the absence of obvious cause, and it may be difficult to find the etiology. Even inflammation may be present but not visible. One must consider the possibilities and then try therapeutic tests. The duration of the burning and the dental situation were not mentioned by the inquirer but may be important.

Inflammation and irritation are often causative. Rough or unclean teeth and dentures may produce irritation at the tip of the tongue. A low grade infection can occur without redness but with soreness and burning of mouth surfaces. Smoking, food or drink may irritate the tongue. Electrogalvanic currents from metal fillings are now considered as credible a cause as when first described.

The tongue mirrors the condition of the intestinal tract to some extent, but the atrophy (with hypoacidity) and catarrh and hypertrophy (with hyperacidity) are usually visible and are not regularly accompanied with burning.

Deficiencies may produce tongue changes, but they are usually visible. Subclinical lesions may come from the lack of several members of the vitamin B complex and are not always cleared by therapy. The absence of the intrinsic factor, as well as an iron deficiency, may produce a superficial glossitis and atrophy which clears on therapy.

A neurogenic cause is possible, especially in the age group mentioned. The location makes a nerve lesion improbable. Burning is the common symptom of the temporomandibular syndrome, a result of occlusion changes from tooth wear and gingival shrinkage. Headache and other symptoms of the syndrome should be present. A psychoneurotic condition, perhaps associated with the climacteric, may include burning of the tongue.

A red blood cell count and a determination of gastric acidity might give valuable information. Appropriate treatment could then be used, if indicated.

Other methods of therapy might include cleaning and smoothing of the teeth or denture, a decrease in smoking and the use of irritant food and drink, the use of an astringent mouth wash (containing zinc chloride) and a trial of penicillin troches. Since vitamin therapy has failed so far, only unusual methods would seem worth a trial. Sevringhaus has reported clearance of chronic mild stomatitis from the administration of large oral doses (50 mg.) of nicotinamide over a two to three week period.

WIDESPREAD BURNING SENSATION

To the Editor:—What would cause burning of the soles of the feet, the palms of the hands, the eyelids, face and rectum, in presence of normal blood and urinary findings, in a man aged 45? What therapy can be suggested?

Edmund R. Nightingale, M.D., Bronx, N.Y.

ANSWER.—It is difficult to make a diagnosis on the data supplied. Acroparesthesia and acrodynia are terms given to an ill defined syndrome of a burning sensation in the extremities, possibly due to vitamin deficiency. Conceivably a similar process might affect the face and rectum also. An allergic state might be considered. In many cases of generalized itching and burning there is a psychiatric background.

A high vitamin diet especially rich in pantothenic acid may be tried, if this has not already been done. Injections of liver extract, as for pernicious anemia, might be tried also. The use of benadryl is sometimes of value in itching and burning of allergic origin. A psychiatric investigation, or possibly the use of the Rorschach test, might be helpful in uncovering neurotic trends.

ASYMPTOMATIC NEUROSYPHILIS

To the Editor:—A professional man aged 42 has for the past thirteen years had a 2 plus blood Wassermann reaction. Reports of spinal fluid tests made in 1940 and 1943 are not obtainable. About ten days ago the patient had a spinal fluid test revealing the cell count 0, colloidal gold 001222100 and quantitative Kolmer 44310. He has been examined by another internist and myself and our findings as to his physical condition are negative. He has had a thorough neurologic examination, which also was negative. The other internist interested in the patient's welfare suggested that we give the patient 10,000,000 units of penicillin. Eighteen months ago I gave him 4,000,000 units of penicillin, thirty-six oxophenarsine hydrochloride and twenty-four thiobismol treatments, and the Wassermann reaction remained 2 plus. A spinal test was not made at that time. It is my suggestion that the patient, if given penicillin at this time, have insulin or malaria along with it. There is a doubt in my mind as to whether the patient should have any treatment at present.

R. M. Nicholson, M.D., Los Angeles.

ANSWER.—In view of the fact that previous treatment of the patient for syphilis has been adequate according to accepted standards and that the present physical findings are negative for evidence of the disease, the decision as to the future handling centers about the significance of the spinal fluid examination just obtained. If the results of the spinal fluid studies done in 1940 and 1943 are not obtainable, the first indication is to check the present study. Experience has shown that single spinal fluid examinations are much less reliable than single blood tests in that, particularly in "asymptomatic neurosyphilis," interlaboratory check is much more difficult. It would be unwarranted, therefore, to enter into additional prolonged courses of

therapy including malaria on the basis of these observations alone. In interpreting the other spinal fluid findings given it would also be helpful to have total protein determinations performed on the fluid with subsequent tests.

Assuming that the positive spinal fluid reactions given are confirmed, their significance is the next consideration. Syphilis, if present, is of long standing in this case. Under the circumstances the likelihood is not great that the blood serologic tests will be reversed to negative by additional therapy. Time alone without treatment would be as likely to accomplish this. Provided the spinal fluid blood count was performed within an hour or two after the fluid was drawn, the fact that there were no cells seems to indicate little or no activity of the central nervous system infection. In just the same way as there can occur fixed positive bloods, so also can there occur fixed positive spinal fluid Wassermanns in the absence of an actively progressing disease. Under such circumstances additional therapy is not indicated but rather prolonged observation, as in all cases of treated seropositive late syphilis.

If further treatment is decided on, penicillin alone in a total dosage of about 10,000,000 Oxford units, as has been suggested, is probably as satisfactory as any mode of approach to the type of problem that is described. This could be given in the form of aqueous crystalline sodium penicillin 80,000 units every three hours day and night for a period of fifteen days (120 injections), a total of 9.6 million units. Penicillin alone has given results as far as can be told in the period of observation as satisfactory as other forms of therapy, including intraspinal and malaria, for all forms of neurosyphilis with the possible exception of symptomatic dementia paralytica. In a field the study of which is as recent as the penicillin therapy of neurosyphilis there is of course still much difference of opinion, and a perusal of these two articles is suggested as being most pertinent to the therapy of the type of case in question:

Stokes, J. H., and Steiger, H. P.: Penicillin Alone in Neurosyphilis, THE JOURNAL, May 4, 1946, p. 1. Moore, J. E., and Mohr, C. F.: Penicillin in the Treatment of Neurosyphilis: I. Asymptomatic Neurosyphilis, *Am. J. Syph., Gonor. & Ven. Dis.* **3**: 405 (Sept.) 1946.

The use of insulin for malaria, considering the risks involved, hardly seems justified in the absence of symptoms and with spinal fluid findings which do not indicate activity or progression. Suspected cases of neurosyphilis should be completely reevaluated every six months or a year over a period of several years until the exact status can be determined. In fact, the potential seriousness of this complication makes periodic checks for life desirable. Future handling other than suggested will depend on the results of the periodic study.

BARTHOLIN CYST

To the Editor:—**A woman aged 37 had a painful cyst about the size of a walnut in the Bartholin region on the right side. On aspiration I found a purulent fluid. After aspiration I injected 100,000 units of penicillin in saline solution into the cyst. Although it is definitely not of gonorrheal origin from the clinical and laboratory point of view, I injected 100,000 units of penicillin in oil on two successive days into the buttocks. Now, two weeks after the aspiration and penicillin treatment, the cyst is flat and about one fifth of its original size and no longer painful at all. The patient has had chronic ulcerative colitis for the past twelve years with occasional acute exacerbations. For the past few months her colitis has been relatively quiescent. Would operative procedure be indicated for this cyst in view of the close proximity between the surgical and the colitis areas or would a more conservative means of treatment be preferable?** **S. J. Weitzen, M.D., Bronx, N. Y.**

ANSWER.—If the patient has no disturbing symptoms, the greatly reduced Bartholin gland cyst may be left alone. Perhaps during the next few weeks it will shrink still more, but even if it does not there is no need to remove it at present. If the cyst should return and certainly if evidence of infection appears, the cyst should be removed notwithstanding the history of colitis. A Bartholin cyst or abscess may be removed satisfactorily by means of an electric cautery as well as by surgical excision.

NEON LIGHTS

To the Editor:—**Will a dermatitis result from a neon light such as used in advertising signs? What are the laws controlling neon lights in relation to the power of the light and the proximity of homes? Are there any harmful effects from such lights?** **E. S. Coster, M.D., Solomons, Md.**

ANSWER.—In the manufacture and repair of the neon type of signs certain chemicals may be employed that are potentially detrimental to workmen. Such risks do not extend to the public. Most cities and possibly states apply regulations as to signs, but these deal chiefly with dimensions, elevations and supports rather than with light intensities. Zoning ordinances often regulate signs including illuminated signs as an aspect of the noninvasion of residential districts by business. All states and many municipalities possess nuisance laws which may be applicable to illumination as a nuisance. However, neon signs are not nuisances per se and many are not nuisances in any legal sense. Some neon type signs do provide affront to the eyes, to sleep and to safety. Nowadays the eyes are confronted with possibly a hundred times as many varied stimuli as they were half a century ago. Eyes are endlessly beset in their continual efforts to accommodate to changing light stimuli. Complex on and off signs close to the viewer are the most disturbing. Some signs have a high frequency flicker probably related to the form of power. Eyestrain from multitudinous signs is inescapable. Confusion in detecting traffic light signals in the midst of scores of other colored signs jeopardizes safety.

PASTEUR TREATMENT FOR RABIES WHEN NOT BITTEN

To the Editor:—**A girl aged 5½ years was exposed to rabies in June 1946. She received the usual fourteen dose Pasteur treatment. About the first day of February 1947 the girl's dog developed signs of rabies, and the diagnosis was pronounced by a veterinarian. Although the girl was not bitten by the dog should she be given another fourteen dose Pasteur treatment?** **Karl H. Kortheuer, M.D., Calexico, Calif.**

ANSWER.—If the girl was not bitten by the dog, as stated to be a fact in the question, then there is no reason whatever for giving her a new course of treatment now. It is assumed that no open places on her skin or lips came into close contact with the dog's saliva after it became rabid. The same answer would be made if the girl had not been "exposed to rabies" and given preventive treatment last summer. Undoubtedly there is still a degree of immunity as a result of that treatment. It is possible that treatment again at this time might cause undesirable reactions on account of the sensitization induced by the treatment last summer.

FOLLICULAR LYMPHOBLASTOMA

To the Editor:—**Will you please discuss the prognosis and treatment of giant follicular lymphoblastoma (Brill-Behr-Symmer's disease).** **Aaron Berger, M.D., Bronx, N. Y.**

ANSWER.—The prognosis in follicular lymphoblastoma is better than in other types of lymphosarcoma. Baggenstoss and Heck (Follicular Blastoma, *Am. J. M. Sc.* **200**:17 [July] 1940) collected data on the duration of the disease in 53 cases of follicular lymphoblastoma. The average duration of life in 24 patients who were living was 4.6 years, and in 29 patients who had died it was 4.8 years. Two patients were still living after seventeen years. Most cases of follicular lymphoblastoma respond well to x-ray treatment, at least temporarily. Either local or total body irradiation may be employed (Sugarbaker, E. D., and Craver, L. F.: Lymphosarcoma, THE JOURNAL, July 13, 1940, p. 112). Radioactive phosphorus or nitrogen mustard may produce a therapeutic effect, but x-ray therapy is to be preferred.

SYNTHESIS OF PENICILLIN

To the Editor:—**With reference to the inference in the Dec. 21, 1946, issue of The Journal that du Vigneaud and his associates were the first to synthesize penicillin, I would point out that this was first accomplished by Robinson and his co-workers at Oxford by the method given a year or so ago.** **Dr. J. A. Marriott, Loughborough, Leicestershire, England.**

ANSWER.—According to available records, d-penicillamine hydrochloride was synthesized on Oct. 4, 1943 by Robinson and his co-workers. 2-Phenyl-4-ethoxy-methylene-5 (4) oxazolone was synthesized on March 14, 1944 by Robinson and his co-workers. 2-Styryl-4-ethoxymethylene-5 (4) oxazolone was condensed with dl-penicillamine on March 27, 1944 by Robinson, and this product had slight antibiotic activity. Robinson obtained evidence of active synthetic penicillin in mixtures of dl-penicillamine and 2-benzyl-4-methoxy-methylene-5 (4)-oxazolone seeded with natural penicillin on Nov. 26, 1945, but the Group at Merck's reported the first synthetic preparation to have antibiotic activity on Feb. 29, 1944 (one month before Robinson's group).

Since all groups were exchanging information, one group cannot claim priority in synthesis.

Du Vigneaud's role in the synthesis of penicillin was to demonstrate that the active material detected in the reaction mixtures prepared by the Merck group and by the Oxford group actually contained penicillin. This was done by (*a*) comparison of "anti-

biotic spectrums" of synthetic and natural material (report of March 1, 1945), (*b*) isotope "tracer" technic (report of Nov. 1, 1945) and (*c*) preparation of "concentrates" of synthetic material by "countercurrent distribution" technic (report of Dec. 15, 1945).

EFFECT OF FASTING ON BLOOD CHOLESTEROL

To the Editor:—When doing a quantitative blood cholesterol in a case of probable hyperthyroidism (with a metabolic rate of plus 31) should the blood be taken on a fasting stomach or not? I understand that fasting causes an increase in blood cholesterol, whereas in hyperthyroidism one would expect a decrease. If the case shows all the usual clinical symptoms of hyperthyroidism and if the metabolic rate is high and the blood cholesterol (fasting) is high is one still justified in making a diagnosis of hyperthyroidism in spite of the high blood cholesterol?

Eugene C. Lowe, M.D., Miami, Fla.

ANSWER.—Studies by Kartin, Man, Winkler and Peters demonstrated that in two days of complete starvation the concentration of cholesterol increased significantly in only a few of their subjects. However, periods of fasting long enough to produce ketosis will cause elevation of the serum cholesterol.

In hyperthyroidism the average concentration of serum cholesterol is below normal, but there will be many instances of normal values. The finding of a higher than normal concentration of serum cholesterol should make one examine the other evidence for hyperthyroidism carefully but does not absolutely exclude that diagnosis.

It is customary but not essential that the patient be fasting when blood is drawn for serum cholesterol determinations.

References:

Kartin, B. L.; Man, E. B.; Winkler, A. W., and Peters, J. P.: Blood Ketones and Serum Lipids in Starvation and Water Deprivation, *J. Clin. Investigation* **23**: 824 (Sept.) 1944.

Mason, R. L.; Hunt, Hazel M., and Hurxthal, Lewis: Blood Cholesterol Values in Hyperthyroidism and Hypothyroidism—Their Significance, *New England J. Med.* **203**: 1273 (Dec. 25) 1930.

Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry Interpretations, ed. 2, Baltimore, Williams & Wilkins Company, 1946, vol. 1.

LEAD SOLDER IN OFFICE STERILIZER AND LEAD PLUMBING

To the Editor:—I had recently repaired a small office sterilizer measuring about 13 by 5 inches and noticed a solder used to stop leaking, which appears to contain lead. I should like to know if there is any danger of lead contamination in sterilizing instruments, especially syringes and needles used for parenteral purposes in such sterilization. I understand plumbing used for drinking water is constructed with precautions against lead poisoning.

M.D., New York.

ANSWER.—The sterilization of instruments or syringes in an office sterilizer repaired against leakage by means of solder which contains lead will not give rise to the risk of introducing significant quantities of lead into the tissues of patients. Traces of lead will be deposited on such equipment, however, and in the case of syringes such traces may react to produce flocculation in injected preparations or solutions which can react with lead salts. Samples of blood or other body fluids taken for analysis for lead (for diagnostic purposes) by means of syringes sterilized in such equipment will also be too greatly contaminated to yield useful results.

Pipes and accessory equipment used for storing or carrying drinking water, as supplied by reliable manufacturers or dealers in the United States, are generally but not always substantially free of lead compounds. Careless installation of such equipment, or repairs made by uninformed or careless persons, may introduce lead-bearing materials in the form of lead pipes, solder and joint luting compounds.

THE VOICE AFTER REMOVAL OF CANCER OF VOCAL CORD

To the Editor:—A white man aged 44, who had just returned from naval service, had a carcinoma of the right vocal cord. This was removed in toto along with the arytenoid. At present he is able to phonate, but his voice can be heard only at a distance of 10 feet in a quiet room. He is a lawyer in civilian life, and his future depends on his ability to talk before a jury without too much difficulty. Do you know of any one who has solved this problem? I thought it might be possible for him to use a contact laryngeal microphone similar to the type used in aviation intercommunication, along with a small type of public address system. Do you know of any one who makes this type of instrument? The instrument, if at all feasible, should be portable.

M.D., Missouri.

ANSWER.—A more usable voice might be achieved by one or more of the following means: 1. A careful laryngologic examination might suggest means for improving the shape and action of the scar tissue vocal cord which formed subsequent to the operation. 2. Voice training might prove helpful. Many of the universities now have teachers, specialists in this work, who could perhaps strengthen the voice by appropriate training. 3. The Wright Electro-Larynx (made by the Aurex Corporation of Chicago) is an electrical vibrating device which is placed against the larynx and the sounds produced are articulated in the usual fashion. Such a device might be helpful. However, the noise produced directly by the instrument is usually objectionable. 4. A lip microphone of the high fidelity type being used in naval aviation with suitable amplification might be satisfactory. This type of microphone is not sensitive to outside noise and has proved to be much better than the old style of laryngeal microphone.

EXCESSIVE BODY HAIR

To the Editor:—Is there any effective treatment to prevent or remove excessive hair on the bodies of women? I have seen several young girls with large amounts of long dark colored hair over the abdomen, back or hips. These girls are definitely handicapped. Is there any treatment, endocrine or otherwise, that will prevent or change this condition?

William M. Bell, M.D., Detroit.

ANSWER.—Although the information given is meager it is assumed that the questioner is not referring to (1) cases of extensive hairy nevi of the bathing trunk type or (2) cases of hypertrichosis associated with basophilic hypopituitarism (Cushing's syndrome) or adrenal cortical tumor. Authorities are in general agreement that if the latter two conditions are eliminated from consideration little can be expected from any treatment on an endocrine basis. It should also be mentioned that the use of x-rays to remove superfluous hair should not be resorted to.

If the amount of hair is not too great or the caliber too fine and it is considered sufficient handicap to indicate treatment, electrolysis may be employed with good results and without scarring, but in the areas mentioned it would seem that the end would hardly justify the tediousness of the procedure. If the amount is considerable and the caliber fine, the wax depilatories may offer the best results even though their effect is but temporary. Contrary to popular belief there is no evidence that the repeated use of such preparations will coarsen the hair, and it is possible that the reverse may be true.

COOLEY'S ANEMIA

To the Editor:—Will you please be kind enough to inform me if splenectomy is still being carried out in Cooley's anemia? Are there any specific measures employed? Are x-rays to the spleen used? Is iron of any value?

John A. Ianacone, M.D., Paterson, N. J.

ANSWER.—Splenectomy is of little benefit in the treatment of Cooley's anemia; some authorities feel that this procedure is contraindicated. The operation is followed by an increase in normoblasts in the peripheral blood, but the anemia is unaffected. No specific form of therapy, including iron, has been of any help in this disease. X-ray therapy is of questionable value and at best is followed by only transient effects.

HYPERTENSION FOLLOWING BENADRYL

To the Editor:—In Queries and Minor Notes in The Journal, March 15, 1947, M.D., New Jersey, reports the development of hypertension in a hay fever patient aged 49 which responded to medical care and rest. During the past year benadryl had been prescribed, and though the patient was relieved of the hay fever he developed a blood pressure of 192/120. Apparently withdrawal of the drug brought about a lowering of the blood pressure to 140/80. The question raised is whether or not hypertension can be produced as a side reaction from the use of either benadryl or pyribenzamine. The reply by the editor is that "it is definitely not the customary action of either benadryl or pyribenzamine to produce a hypertension." Permit me to report that benadryl produced a similar rise in blood pressure in one of my hay fever subjects—a man aged 55—who received ragweed injections preseasonally and seasonally for many years with good results but who was given benadryl in the summer of 1946 for possible added relief. He developed severe headaches and a rise in blood pressure of 200/110. Following withdrawal of the drug the blood pressure returned to his usual level of 138/85. The patient refused to try pyribenzamine. A colleague, following my report of this case at a medical meeting, informed me that he has heard of a similar untoward reaction resulting from benadryl. Thus there are now 3 cases of a transient hypertension resulting from benadryl. I hesitate to account for this reaction. Further studies should be indicated to explain adequately this type of untoward reaction following the ingestion of this antihistamine drug. Apparently similar reactions have not been reported in connection with pyribenzamine. H. Harold Gelfand, M.D., New York.